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CONTENTS FEBRUARY, 1937

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January, 1937

The Data Program for the Appraisal of Dairy Farms ..... *True D. Morse*
The Valuation of "Guaranteed" Mortgages ..... *S. Edwin Kazdin*
The Changing Scene and Appraisal Progress ..... *Maurice F. Reidy*
Planning the Appraisal ..... *K. Lee Hyder*
Appraising Typical Business Properties for Loan Purposes ..... *Fred L. Chapman*
A New Approach to the Solution of the Appraisal Problem ..... *Frederick M. Babcock*
The Appraiser's Responsibility Under H. O. L. C. Property Appraisal Report Form ..... *Leonard Downie*

October, 1936

Certification of Real Estate Appraisers by Public Authority ..... *David T. Rowlands*
Accrued Depreciation ..... *K. Lee Hyder*
The Data Program ..... *Ayers J. du Bois*
The Use of "Standards" in Appraisal Practice ..... *R. M. Fischer*
The Land Survey Systems of the United States ..... *Ralph V. Field*
The Changing Family ..... *William F. Ogburn*
The Relationship between the Right of Way Agent and the Appraiser ..... *Peter Hanson*
Appraising for Federal Tax Purposes ..... *Warren P. Hunnicutt*
Some Principles of Land Utilization ..... *Harry Grant Atkinson*

July, 1936

Rationalizing Appraisal Practice ..... *Ivan A. Thorson*
Bracketing in Appraising ..... *Ayers J. du Bois*
Appraising as a Profession ..... *Harry Grant Atkinson*
Advertising by Appraisers—An Open Letter to M. A. I.'s ..... *J. George Head*
Residential District Permutations ..... *August B. Schulte*
Preferential Treatment of Industrial Realty ..... *W. E. G. Gaillard*
Appraisal of Water Front Real Estate ..... *R. E. Thompson*
Gross Income as an Index of Value ..... *Cuthbert E. Reeves*
The Science and Practice of Urban Land Valuation ..... *Walter W. Pollock*

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The Depreciation Base in Railroad Accounting

By HAROLD D. KOONTZ*

THE present trend toward rising prices seems to foreshadow not only the resurrection of the fair-value question by publicly controlled enterprises, but also an inquiry into depreciation policies. This seems especially likely in the case of the railroads, since the Interstate Commerce Commission has been perhaps more exacting in the details of depreciation reserve accounting than have most state commissions which regulate local utility businesses.

If prices advance to materially higher levels, the privately controlled industrial enterprises are in a position to argue for higher depreciation charges against revenues if they think it wise to do so. Moreover, should the principle of the undistributed corporation surplus tax be retained, higher depreciation charges will be not only economically wise, but may make possible reduction of taxable surplus. While firmly intrenched accounting practice may not permit the enterprises to change their depreciation bases from original cost to the possible higher costs which seem destined to prevail, private businesses can perhaps guard against rising prices to some extent by carrying larger balances to contingency reserves, thus reducing the apparent surplus against which dividends and taxes might be charged. In the case of publicly regulated enterprises, especially where accounting policies and systems are prescribed by public authority and where rates are set by commissions, freedom in regard to depreciation charges is not always enjoyed. The purpose of this paper, then, is to examine the depreciation policy of the railroads and the regulations which are apparently to be put into effect in the near future by the Interstate Commerce Commission, with special reference to the possible effects of rising prices on railroad depreciation

* Instructor in Economics, Colgate University.
This paper is based in part upon research carried on in connection with a doctoral dissertation accepted at Yale University.

accounting, and to legal and economic aspects of these effects. While attention is focussed here primarily on depreciation accounting for railroads, much of the discussion applies equally to local public utilities under regulation by state commissions.

Even though accountants have traditionally based depreciation charges on original cost, largely because of its practicability, it is plain that in periods of rising prices serious question can be raised as to the wisdom of that policy. Under the system of depreciation reserve accounting in which periodical allowances for depreciation are calculated on service-life estimates, the variable elements subject to statement in terms of price are two: (1) the value of the unit or group of units to be depreciated, and (2) the salvage value at the end of service life. Since salvage value is a relatively unimportant element, the point of contact between depreciation policy and rising prices lies mainly in the depreciation base itself. If prices are likely to rise, the basing of depreciation charges on original cost, no matter how practical that may seem, brings up the question of whether true loss of service value of *property* consumed which has occurred within a fiscal period has been charged to that period.[1]

The rise in prices during the World War caused many writers to question the wisdom of basing depreciation charges on original cost.[2] Before the business depression, others questioned this kind of depreciation policy.[3] Moreover, the United States Supreme Court caused some confusion among public utility accountants in 1930 when it allowed a Baltimore street railway company to give effect to higher prices in calculating depreciation as an operating expense for rate purposes.[4] This decision by the Court was roundly criticized by the dissenting justices[5] and by many writers in the field, as representing an impractical treatment of the depreciation problem.[6]

Depreciation Accounting Regulations of the I. C. C.

Although the order has not yet been made finally effective, the Interstate Commerce Commission in 1931 handed

[1] In the opinion of the writer, definition of "service value" in terms of dollar investment is illogical where prices have changed since the investment was made. A more correct statement of that which is really lost through depreciation within a particular fiscal period is cost of the service units consumed in terms of prices existing during that period. For further discussion, see *infra*, at pp. 7-8; 10-12. It may be well to note that consumption of service units may be attributable to predictable obsolescence and inadequacy as well as to age or wear.

[2] Accounting and management literature contains much discussion on this point, some of which has to do with the problem outside the public utility field. For example, see Rastall, E. S., "Depreciation Reserves and Rising Prices," 29 *Journal of Accountancy* 123 (February, 1920); Bauer, John, "Renewal Costs and Business Profits in Relation to Rising Prices," 28 *Journal of Accountancy* 413 (December, 1919).

[3] Especially see: Dillman, J. F., "Accounting for Values or Dollars," 11 *Management and Administration* 118 (February, 1926); DuBrul, E. F., "Some Common Delusions Concerning Depreciation," 50 *Mechanical Engineering* 373-7, 617-20 (April, July, 1928); Weimar, E. F., "Depreciation at Cost or Replacement Value," 69 *American Machinist* 383 (September, 1928); Scott, D. R., "Valuation for Depreciation and the Financing of Replacements," 4 *Accounting Review* 221-6 (September, 1929); Mason, Perry, "Accounting for Current Depreciation," 5 *Accounting Review* 106-10 (June, 1930); Bruie, W. J., "Basing Depreciation upon Actualities," 85 *Inland Printer* 49-50 (September, 1930); Schmidt, F., "Basis of Depreciation Charges," 8 *Harvard Business Review* 257-64 (April, 1930).

[4] *United Rwys. & Electric Co. of Baltimore v. West*, 280 U. S. 234 (1930).

[5] The dissenting opinion of Mr. Justice Brandeis, in which Mr. Justice Holmes concurred, is an exceptionally scholarly presentation of the case for use of original cost as the depreciation base. While shorter, the dissenting opinion of Mr. Justice Stone is also a very able defense of the practicability of original cost.

[6] A good example of the confusion arising from the Baltimore Railways case is found in the discussion of depreciation in the 1932 edition of Paton, W. A., *Accountants Handbook* (New York: Ronald Press). Also see Morehouse, E. W., "Baltimore Railways Case and the Depreciation Mystery," 6 *Journal of Land & Public Utility Economics* 213-222 (May, 1930).

down its report and order extending compulsory depreciation accounting for railroads to include road and structures accounts.[7] In doing so, the Commission followed practically the same principles it had set up in its orders of 1907-14 by which depreciation accounting for equipment was made compulsory.[8]

With the classifications of that time the Commission established original cost, in principle, as the basis for computing depreciation charges. Since original costs were not always known, the carriers were given discretion as to whether they should use, as an estimated original cost, ledger value or "purchase price of the property deemed to be equitable by the carrier."[9] In any event, the carrier was to report to the Commission which basis had been used. In the actual operation of these classifications, ledger value was found by the Commission to be suitable in most instances, although in many cases estimated original costs were resorted to, especially where ledger values could not be broken down to the individual accounts or units. In such cases, the unit prices used by the carriers were usually either an estimate of probable cost or the figures used by the Commission in its valuation work.

After the Transportation Act of 1920, the Commission undertook a study of depreciation charges with a view to extending compulsory depreciation accounting to road and structures.[10] The preliminary report was issued in 1923 and after hearings the first report and order were issued in 1926. At this time apparently no doubt existed as to what should be used as the depreciation base. As the Commission said,

> "It is agreed by all that the depreciation expense should be based primarily upon the original cost to the accounting company of the unit of property in question. The principle is precisely the same in the case of the expense incurred over a period of years in the consumption of long-lived property in service, as it is in the case of the expense incurred in the more immediate consumption of such property as coal. In both cases the cost of the property in question is the basis of the charge to operating expenses."[11]

Consequently, when it came to announcing the method to be followed by the carriers in computing depreciation, ledger value was taken to be the base. Although, as the Commission noted, ledger value is not truly representative of original cost, the discrepancy between the two will tend to diminish as the more accurate cost records, established by the classifications of 1914, become effective.

On opening the case for rehearing at the request of the railroads, the carriers took issue with the Commission's choice of original cost or ledger value as the base. Fortified by decisions from the Michigan Supreme Court[12] and the Maryland Court of Appeals,[13] as well as by the present-value doctrine of the United States Supreme Court, the railroads maintained that confiscation would result unless the present-value basis were used in computing depreciation.[14]

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[7] Depreciation Charges of Telephone and Steam Railroad Companies, 177 I.C.C. 351.

[8] Interstate Commerce Commission, "Classifications of Operating Revenues and Expenses of Steam Roads," issue of 1914. Note that in 1907 a partial plan was submitted to the railways but the comprehensive plan was not completed until 1914.

[9] *Ibid.*, p. 33.

[10] Very few railroads have availed themselves of the voluntary provisions in the 1914 orders allowing depreciation accounting for road and structures.

[11] Depreciation Charges of Telephone and Steam Railroad Companies, 118 I.C.C. 295, 344.

[12] *Mich. Pub. Util. Com. v. Mich. State Tel. Co.*, 228 Mich. 658 (1924).

[13] *West v. United Rwys. and Elec. Co.*, 142 Atl. 870 (1928).

[14] *Exceptions and Brief of the Presidents' Conference Committee in Docket 15100* (Nov. 1, 1929), pp. 72-83 (Exception No. 6).

The railroads' position seemed to be strengthened, before the final report (i. e., the 1931 report) was formulated, by the Supreme Court decision in the Baltimore Railways case, where the Court maintained that for purposes of determining confiscation in connection with rates the depreciation base should be present value just as is the rate-base.[15]

The Commission refused to be deterred from its holding in favor of original cost (or ledger value) as the basis for computing annual depreciation charges. The Commission maintained: (1) that its practice of "basing depreciation charges upon original cost is general in this country";[16] (2) that the Supreme Court itself had approved use of original cost as a basis of calculating depreciation charges for income tax purposes; [17] and (3) that, since its accounting regulations had never before been challenged on that score, even by the railroads, the Commission doubted whether the carriers really desired a basis which involved a complete change in accounting technique and philosophy.[18]

As for the attitude of the Supreme Court in the Baltimore Railways case, the Commission felt that the Court was not "passing on accounting regulations or the authority to prescribe them" and that the real issue in that case was "whether or not certain fares which had been prescribed by the state commission would result in confiscation."[19] In support of this position the Commission quoted the Kansas City Southern Railway case in which the Supreme Court had said in regard to accounting regulations that "so long as it [the commission] acts fairly and reasonably within the grant of power constitutionally conferred by Congress, its orders are not open to judicial review."[20]

The Railroad Position

In general, the opposition of the railroads to original cost or ledger value as the depreciation base seems to date from the rehearings after the Commission's first report and orders on depreciation charges in 1926. Possibly, the railroad practice of charging cost of replacing units to operating expense, employed on all accounts before 1907 and on many accounts after that time, indicates that the railroads have favored replacement cost as the depreciation base for some time.

But, if the railroads really favored replacement cost as the depreciation base, that attitude cannot be deduced from the original hearings on the depreciation case or from the exceptions and briefs filed previous to the 1926 report. When the cases were opened for rehearing after that report, the railroads took a decided stand in favor of replacement cost or present value. What caused the sudden turn in this direction is not clear. It might have been the result of the court decisions mentioned above, in which the principle was laid down that present value is the proper basis for calculating depreciation charges. Again, it may have been the belief of the railroads that the base offered a vulnerable point for assailing the legality of the Commission's entire depreciation plan.

[15] *Supra*, n. 4.

[16] Depreciation Charges of Telephone and Steam Railroad Companies, 177 I.C.C. 351, 374 (1931).

[17] See *United States v. Ludey*, 274 U. S. 295, 300-1 (1927).

[18] Depreciation Charges of Telephone and Steam Railroad Companies, 177 I.C.C. 351, 376-7.

[19] *Ibid.*, p. 380.

[20] *Kansas City Southern Rwy. v. U. S.*, 231 U. S. 423, 456-7 (1913). Note that the court said respecting accounting regulation, at p. 452: "A statement of the theory is sufficient to show that the regulation is not arbitrary in the sense of being without a reasonable basis and that there is evidence that the commission was warranted in adopting it, as sustained by expert opinion and approved by experience."

As a matter of fact, probably a combination of these features led the railroads to condemn use of original cost as the depreciation base. The exceptions and brief of the Railroad Presidents' Conference Committee attacked use of original cost on the grounds that it denied the carriers the "right to maintain the integrity of the property" through forcing them to use an "obsolete price level."[21] The committee contended that the rights of a utility to collect depreciation charges, guaranteed by the Knoxville Water case,[22] demanded that the return provided by depreciation charges should be a return of property and not cost on an old price level. In short, the railroad argument was that depreciation charges based upon original cost did not result in charges consonant with consumption of property. Attorneys for one railroad company illustrated this point by reference to the German railway system and the post-war currency depreciation. At the height of the inflation, the "pre-war investment in the German railways expressed in marks would have had a value in stable currency of less than a dollar, and the annual exhaustion of property in respect thereof computed in marks upon the cost in marks would have been equivalent to one cent."[23]

The railroad position respecting the depreciation base presents several interesting implications. First and foremost, the railroads were attempting to overthrow the Commission's depreciation order by declaring that use of original cost as the base was illegal, unauthorized, and unreasonable. Hence, the whole order was without proper foundation. Second, there is no convincing evidence that the railroads really wanted to use replacement cost or present value as the base in the event that depreciation charges were prescribed by the Commission. The railroads have not, so far as is known, advanced any plan whereby effect could be given to rising prices in charges for depreciation. The depreciation order of the Commission extending compulsory accounting to road and structures has been in effect for more than one year. In that time, the railroads have not opposed use of original cost in principle for the depreciation base. Unless the railroads see in the depreciation base a means of contesting and overthrowing the Commission's depreciation orders, the railroad managements, none too sympathetic with depreciation accounting anyway, will not likely insist upon a depreciation base reflecting higher prices.

The Position of the Courts

It is hardly sufficient to take any one decision of the United States Supreme Court and say that that case gives guiding principles as to what shall be the depreciation base. The Baltimore Railways case, for example, may possibly be regarded as embodying the most positive pronouncement concern-

[21] *Exceptions and Brief of the Presidents' Conference Committee in Docket 15100*, pp. 72-83. It is an interesting feature of the brief that the committee assailed the view of the Commission that depreciation charges are similar to any other operating expense. The Commission had illustrated its point by use (177 I.C.C. 379-80) of expense for coal. The Commission had urged that it is the actual expense of the coal as represented by its cost and not the cost of coal purchased in replacement which should be charged to operating expenses. To this the committee said (p. 83), "Coal does not aptly illustrate the property of a railroad. It is bought for immediate consumption. But, even so, were coal purchased in pre-war times at $5 a ton which is now worth $15 a ton, no proper system of accounting designed to reflect the present cost of service would justify charging that coal in at the obsolete price level of $5 a ton. Of course, no such refinement of accounting is customary in railroad accounts."

[22] *Knoxville v. Knoxville Water Co.*, 212 U. S. 1, 13-14 (1909).

[23] Counsel for the Southern Pacific Railway System, *Exceptions, Brief and Argument in Docket 15100*, pp. 22-3 (Nov., 1929) (mimeographed).

ing use of a base for depreciation charges for public utility accounting. In order to get a more accurate picture of what a publicly controlled business may legally demand by way of depreciation accounting policies, a study of the legal aspects of the depreciation base calls for an examination of the various implications of the Baltimore Railways case. It is not correct to say that this case decided that present value must be used as the depreciation base in public utility accounting, even though Mr. Justice Sutherland, reading the majority opinion in the case, said,

> "Manifestly, this allowance cannot be limited by the original cost, because, if values have advanced, this allowance is not sufficient to maintain a life of efficiency . . . This naturally calls for expenditures equal to the cost of worn out equipment at the time of replacement; and this, for all practical purposes, means present value. It is a settled rule of this court that the rate base is present value, and it would be wholly illogical to adopt a different rule for depreciation."[24]

In spite of what the justices of the Supreme Court may *say* in particular cases, the determination of the legality of an accounting plan providing for original cost as the depreciation base can only be made in the light of what has been *decided*. Mr. Justice Cardozo emphasized this difference between dictum and decision in a fairly recent public utility case.[25]

While no attempt is made to review the whole field of valuation here, some of the questions raised by the Baltimore Railways case may be clarified by understanding just how the Supreme Court has used its concept of present value as applied to the rate-base. For some time after the first valuation case, *Smyth* v. *Ames*,[26] the Supreme Court restricted itself to rather general statements concerning fair value and its calculation.[27] In several leading cases decided in the twenties the Court refused to allow rates calculated on a fair value which did not give adequate effect to the higher price levels prevalent after the World War.[28]

Perhaps the clearest discussion of principles controlling the rate-base was given by the Court in the Los Angeles Gas and Electric Company case,[29] decided in 1933. During the twenties it had seemed to many that the Court was requiring the calculation of fair value by commissions on a reproduction-cost-new-less-depreciation basis. In the Los Angeles case, the Court clarified its position somewhat and emphasized that in making decisions in valuation cases it had "refused to be bound by any artificial rule or formula which changed conditions might upset." It declared that, among the relevant facts to be used in ascertaining fair value, were "actual cost," "cost of reproducing the property," and "historical cost"; and that the weight to be given to each "is to be determined in the light of the facts of the particular case."

The most interesting feature of the Los Angeles Gas and Electric decision was the Court's refusal to set aside the valuation of the California Commission even though the valuation was ad-

[24] *United Rwys. and Elec. Co. v. West, supra*, at 254.

[25] *Dayton Power and Light Co. v. P. S. Com. of Ohio*, 291 U. S. 290, 292 (1934).

[26] 169 U. S. 466 (1898).

[27] However in *San Diego Land and Town Co. v. National City*, 174 U. S. 739 (1899) and in *San Diego Land and Town Co. v. Jasper*, 189 U. S. 439 (1903), the Court rejected original cost as the sole basis of fair value, since so to use original cost would not save the public from "inflated and improper charges" and "injudicious expenditures."

[28] Especially in *Missouri ex rel. Southwestern Bell Tel. Co. v. P. S. Com.*, 262 U. S. 274 (1923); *McCardle v. Indianapolis Water Co.*, 272 U. S. 400 (1926); *St. Louis and O'Fallon Rwy. Co. v. U. S.*, 279 U. S. 461 (1929).

[29] *Los Angeles Gas and Elec. Co. v. R. R. Com.*, 289 U. S. 287.

mittedly based largely upon historical cost. This, however, need not be taken as denoting the Court's approval of historical cost as a method. The Court stated clearly that the only question involved was one of confiscation and that the Court was not sitting as a "board of revision" to establish methods by which results were to be reached. The Court's interest was stated to be primarily in results and their effects rather than in any method used. Consequently, because of the decline in prices and because the company had made most of its investment in times when prices were higher, the Court felt that the valuation set by the historical cost method gave *results* which were not confiscatory.

It would be a mistake to assume that that the doctrine of the Los Angeles case gives administrative commissions a free rein. In that case the Court pointed out that administrative method "may have a definite bearing upon the validity of the result reached."[30] The extent to which method may affect result is indicated in the Chesapeake and Potomac Telephone Company case, decided in 1935.[31] In that case the Court held that the Commission's "entire method" was so "erroneous" that its use "necessarily involved unjust and inaccurate results."[32] To what extent this decision establishes the Court as a board of revision to control methods is not definite, since one cannot foretell what features of a method may strike the judicial mind as necessarily resulting in confiscation.

Depreciation—A Return of Cost or Property

At the very bottom of the conflict over the depreciation base is the question whether charges for depreciation are to be regarded as a means whereby actual original cost (in dollars) of property consumed in service is to be returned through charges to operating expenses, or whereby the value of the physical and intangible property itself is to be returned.

Some light was shed on this question by the Supreme Court in the Knoxville Water case, in which the Court said that a public utility "is not bound to see its property gradually waste, without making provisions out of earnings for its replacement," and that "it is entitled to see that from earnings the value of the property invested is kept unimpaired so that at the end of any given term of years the original investment remains as it was at the beginning."[33]

To be sure, the Knoxville case does not define what is meant by "property" and "original investment." If by these terms are meant the physical and intangible assets, then the Knoxville case would apparently entitle the utility to recover depreciation based on present-day cost or replacement cost. If, on the other hand, the Court meant dollars invested, the Knoxville case could be cited to support use of original cost as the depreciation base.

In valuation cases involving confiscation of property, the Supreme Court

[30] *Ibid.*, at pp. 304-5.

[31] *West v. Chesapeake and Potomac Tel. Co.*, 295 U. S. 662.

[32] *Ibid.*, at p. 675. In this case the Commission had applied a general price index (computed from 16 established indices) to an earlier judicially prescribed valuation. The Supreme Court found the index unsuitable as a means of reflecting the value of a telephone plant, and quoted (at p. 676) by way of support in denying the applicability of the index *Northern Pacific Rwy. Co. v. Dept. of Public Works*, 268 U. S. 39, at p. 43, to the effect that "an order based upon a finding made without evidence or based upon a finding made upon evidence which clearly does not support it is an arbitrary act against which courts afford relief."

[33] *Knoxville v. Knoxville Water Co.*, *supra*, at pp. 13-14.

had indicated, even before the Baltimore Railways case, that the measure of property is its present value.[34] Also prior to that same case, two state supreme courts interpreted property which a utility was entitled to recover through depreciation charges in terms of present value.[35] It should have been no surprise, then, that the United States Supreme Court, in construing confiscation of property in relation to depreciation charges, favored measurement of property in terms of present value rather than original cost.[36]

As a matter of fact, the Court could hardly have come to a different conclusion. Students of price level changes can scarcely believe that depreciation charges based upon original cost necessarily result in a return of the value of the property at the time such charges are made.

Legality Tested by Result

One fact is especially noteworthy about the cases decided by the Supreme Court in which the rate-base or the depreciation base was a point of conflict. The Court was dealing in every case either with the question of confiscation or with the interpretation of a statute. In no case involving confiscation did the Court say what methods an administrative commission *must* employ. In most cases all the Court did was to apply its present-value test for determining existence of confiscation. Indeed, there is much evidence that the Court will not interfere with the processes of an administrative commission unless the results, according to the Court's test, involve confiscation; or, as in the Chesapeake and Potomac case, unless the Court believes the methods to be so arbitrary or erroneous as necessarily to violate due process.

Whenever the practices of the Interstate Commerce Commission have come before the Supreme Court, that Court has tended to allow the Commission latitude in regard to methods so long as the methods gave constitutional results. In the Goodrich Transit Company case early in 1911, the Supreme Court spoke of giving the Hepburn Act of 1906 "a practical construction and one which will enable the Commission to perform the duties required of it by Congress."[37] A similar opinion was stated in the Kansas City Southern Railway case in 1914. Here the Court upheld the Commission's accounting orders, implying that, if the Commission wanted to require certain features, such as a depreciation reserve, the power conferred by Congress to regulate railroad accounting embraced a fair and reasonable administration of such matters.[38] The wide discretion of the Commission in accounting was reiterated in the Norfolk and Western case in 1932.[39]

[34] See interpretation of property in Minnesota Rate Cases, 230 U. S. 352, 454 (1913); *Missouri ex rel. Southwestern Bell Tel. Co. v. P. S. Com., supra*, at p. 288; *Georgia Rwy. and Power Co. v. R. R. Com.*, 262 U. S. 625, 629-31, 633 (1925).

[35] *Mich. Pub. Util. Com. v. Mich. State Tel. Co., supra*, at pp. 665-6; *State ex rel. Hopkins v. Southwestern Bell Tel. Co.*, 115 Kas. 236, 292 (1924). Also note the same interpretation in a lower federal court case, *United Fuel Gas Co. v. R. R. Com.*, 13 Fed. (2d) 510, 523 (1925).

[36] *United Rwys. and Elec. Co. v. West, supra*, at p. 254. It is not so easy to agree with the reasoning expressed in the majority opinion, written by Mr. Justice Sutherland, saying that "for practical purposes" present value and replacement cost are the same.

[37] *I. C. C. v. Goodrich Transit Co.*, 224 U. S. 194, 243. See also *New Haven R. R. v. I. C. C.*, 200 U. S. 361 (1906).

[38] *Kansas City Southern Rwy. v. U. S., supra*, at pp. 456-7. See *supra*, n. 20.

[39] *Norfolk and Western Rwy. v. U. S.*, 287 U. S. 134. The recent decision in *American Tel. and Tel. v. U. S.*, 81 Law. Ed. 116 (December, 1936) is also interesting as an expression of the Supreme Court's policy of refusing "to substitute its own discretion for that of administrative officers who have kept within the bounds of their administrative powers" (at p. 118). This case involved an accounting order of the Federal Communications Commission.

Examination of Supreme Court decisions respecting the rate-base, depreciation base, and accounting orders of the Commission indicates that, as method, the depreciation accounting regulations of the Interstate Commerce Commission in their application to depreciation are not open to Supreme Court review. However, if this method does not allow a public utility, such as a railroad, to recover the value of property as it is exhausted, there seem to be ample grounds for forcing the Commission to allow depreciation computations to be made on some other basis than original cost or ledger value.

Question may be raised as to whether an accounting order could conceivably involve the taking of property or property rights without due process of law. To date the Supreme Court has been wary of interfering with such administrative orders. But if a railroad or other public utility could show clearly that an accounting regulation in respect to depreciation forced the company to set on its books a reserve not covering the value of the property depreciated, or to exclude from its operating expenses the present cost of property currently consumed, the Supreme Court might find such use of administrative discretion to be unreasonable.

So far as the railroads are concerned, if price levels are materially higher than when road and equipment items were purchased, a depreciation charge based on original cost apparently might be set aside. If price levels are no higher than those prevailing when property was originally bought, the depreciation charge resulting would appear to be lawful, even though based upon original cost.

The Legality of the Commission Ruling

If the matter were pressed as has been suggested above, the real test of the legality of the Commission's ruling on the depreciation base would be whether or not the *effect* would be to force the carriers to use a base lower than the present fair value of the property. Original cost, or the combination of costs, prescribed by the Commission does not in itself constitute a base which would give results forbidden by the Constitution, that is, confiscation of property without due process of law.

Would the depreciation base prescribed by the Commission be lower than a base the Supreme Court might approve? It is difficult to say just what base the Supreme Court might approve, since so many elements of judgment enter into the determination. But if the present reproduction cost of the railroads is not far from the ledger-cost base prescribed by the Commission, the Court would probably uphold the Commission.

Some idea of the present reproduction cost of the railroads may be obtained from a valuation study made by the Interstate Commerce Commission for railroads operating in eastern and southwestern territories. A summary of this study is shown in Table I. Excepting land and rights in making all computations, it seems reasonable to conclude that investment in road and equipment without deduction of depreciation reserves, approximates the original cost as found by the Commission. Note that at the end of 1933 the reproduction cost new was nearly 15% higher than original cost. Cost of reproduction new less depreciation, however, was nearly 17% lower than original cost. With the increases in prices since that date, reproduction cost new is probably materially higher, and may be enough higher to make cost of reproduction

TABLE I. VALUATION DATA PERTAINING TO RAILROADS OPERATING IN EASTERN AND SOUTHWESTERN TERRITORIES, AS OF DECEMBER 31, 1933*

Item	Amount (000,000 omitted)
Cost of reproduction new (except land)	$15,620
Cost of reproduction less depreciation (except land)	11,364
Original cost (except land)	13,575
Land and rights—present value	1,805
Working capital (including materials and supplies)	163
Investment in road and equipment (carriers' book, without deduction of accrued depreciation)	15,618

*I. C. C., Bureau of Valuation, Exhibit 50 filed in *Dockets Nos. 25390 and 25692.*

new less depreciation practically equal to original cost.[40]

If the legality of the Commission's original-cost basis were tested by the present-value doctrine of the Supreme Court, it would seem that the Court would be forced to give predominant weight to cost of reproduction new less depreciation. In so far as the results of the study shown in Table I may be generally applicable, the original-cost base would fulfill the legal requirements. If the Court, on the other hand, should regard depreciation as a process in which the cost of property consumed at present prices is charged off, more weight would be given to cost of reproduction new. In this event, the Commission's base would probably not meet the test of legality. Prices would not have to rise much higher to cast serious doubts on the legality of the Commission depreciation base, irrespective of which view the Supreme Court might take, should the question of the depreciation base ever be pressed in court.

With the other regulatory problems of greater immediate importance facing them, the railroads are not likely to test the adequacy of the depreciation base. If they should see a possibility of litigating for higher rates as a result of increasing costs, they might support their plea in part on higher depreciation charges based on a present-cost depreciation base. Or, if prices should continue their rise for some time, the railroads might feel compelled by economic and financial considerations to question the adequacy of an original-cost, or ledger-cost, depreciation base, even in accounting procedure.

Present or Replacement Costs as the Depreciation Base

Under present methods of accounting, whereby dollar costs are recorded in the investment and operating accounts, the original-cost method seems to be by all odds the most practicable basis upon which to make depreciation charges. If original cost is known, there is no doubt that calculation of annual depreciation charges on this basis is capable of more exact computation than with use of any other base. It is worth noting, however, that not only may such exactness be illusory in face of changing prices, but that one cannot be sure the accounts of the railroads do reflect original costs very closely. The Commission has recognized this latter possibility, especially in the period prior to 1914, and has provided that, where a carrier cannot prove ledger costs to be authentic, reproduction cost new as of the valuation date (1914) shall be taken as ledger value.

Accountants, in general, have not

[40] According to the Department of Labor wholesale price index, the price index for August, 1936 was over 14% higher than in December, 1933. See Department of Commerce, *Survey of Current Business*, Vol. 14, no. 2, p. 24 and *Idem*, Vol. 16, no. 10, p. 24. Prices of materials entering into railway construction have probably not risen nearly this much, at least not by the end of 1935. See 100 *Railway Age* 57-65 (January, 1936).

sanctioned use of any other figures than those purporting to be original cost, whether dealing with the cost of coal consumed within a fiscal period or the cost of fixed property extending over many fiscal periods. If effect were to be given to rising (or falling) prices in distributing the cost of property giving service for many accounting periods, several bases might be used. One base upon which to compute depreciation costs is the cost of replacing the unit of property at the time it is retired. Calculation of depreciation allowances on this basis would seem to imply that the function of the depreciation reserve is to impound funds, by segregating credits from surplus, sufficient to replace units of property when retired. Another base often suggested is the present reproduction cost of the unit in service. Use of this base implies that the function of depreciation charges is to charge to operations the present cost of property consumed within the fiscal period.

The most usual criticism advanced against using any other base than original cost is that to do so would introduce conjectural estimates into accounting. Obviously, the amount of the replacement cost can only be estimated and can never really be known until actual replacement occurs. In this respect, reproduction cost, being present-day costs, seems to be more practicable.

If the reproduction-cost basis were strictly applied, changes in the base might have to be made every fiscal period, if prices change; while a replacement-cost estimate once made might need no further changes for several fiscal periods, or even for the life of the asset.

This fluctuating quality of reproduction cost, if incorporated into the accounting system of a business, has caused accountants to resist its use. It is not at all essential, however, for use of reproduction cost as the depreciation base to have the investment accounts on the same basis. Strict consistency would probably demand that use. But no objection need exist to a practice of calculating depreciation charges on a reproduction-cost basis, and setting up a special account as a supplement to the capital account to handle the excess or deficit if the company finds itself with reserves higher or lower than real depreciation at the time the asset is retired.[41]

Moreover, it is not necessary that each unit be appraised each fiscal period in order to ascertain reproduction cost. Changing prices would be given accurately enough by use of suitable price indexes for the various accounts. If more accurate results were desired, special price indexes could be used for particular types of property units.

At best, depreciation charges are estimates. While there is force to the argument that use of any but original costs adds to the uncertain nature of depreciation charges, if the purpose of these charges is to provide for maintenance of investment *in property*, the vagaries of price movements make charges based on original cost quite erratic as measured by actual purchasing power.

The practice of the English railways in using replacement cost as the basis has not led to any noticeable confusion in the accounting system. The experience with rising costs caused by the World War brought to light the inadequacy of the renewal allowances based on original cost. As a result of this

[41] For a detailed discussion of the technique of incorporating reproduction cost into depreciation accounting, see the excellent article by Graham, W. J., "Public Utility Valuation: Reproduction Cost as a Basis," 7 *Journal of Business* 1-95 (April, 1934).

experience, the English railways were allowed to change the basis for depreciation charges, and the estimated renewal cost of assets was in general adopted.

An American student of valuation and prices has worked out in some detail a method whereby present costs could be incorporated into an accounting scheme without apparently causing serious confusion.[42] Although the suggestions made would probably need some refinement in actual practice, such contributions to accounting and business show that practical difficulties in accounting for depreciation charges based on present costs are not insuperable.

In the railroad field, one must admit that, should prices fall, a genuine practical objection exists to use of reproduction cost. If prices fall and dollar depreciation charges are reduced, the impairment of capital, stated in dollars, might thereby lead to serious consequences. The effect of such impairment might well be alleviated through building up an appreciation account in times of rising prices and charging the dollar shortage to this account in periods of falling prices. Note, however, that in the case of falling prices the capital "impaired" is dollars rather than property investment. Serious consequences could only occur as the result of large debt liabilities stated in dollars, a feature so characteristic of the railroads.

Higher Price Levels and Depreciation Policy

The problem of the railroads today seems to be largely one of financial survival. With more railroad mileage in receivership or trusteeship in recent years than ever before in American history, such problems as that of depreciation are dwarfed in the popular mind by the struggle to increase railroad net income.

It is well to remember that perhaps some part of the present railroad crisis is attributable to the failure of the railroads to make adequate depreciation charges in the past. The present railroad difficulties are directly related to high interest charges resulting from debt-burdened financial structures. As a matter of fact, almost all the now bankrupt carriers had some income before interest charges throughout the dark days of the depression. Adequate depreciation allowances in the past would have meant the impounding of funds in cash or property which would surely have served to reduce the fixed debt which is now on the average around 3/5 of the railroads' capitalization.

The depreciation problem is consequently bound up more closely than is usually supposed with present railroad difficulties. Accruing adequate depreciation reserves is not only good accounting practice for the sake of accuracy in stating assets, but it is sound financial policy as well. The Interstate Commerce Commission has gone far in recognizing the importance of depreciation reserves by making such charges obligatory for railroad equipment in 1914 and by planning to extend the charges to road and structures at the present time.

But if depreciation charges are to mean what they should in preserving investment in property and in charging off the value of the property as it is consumed, they must, it would seem, take into account changing price levels. If prices are likely to rise materially in the near future, depreciation charges based on original cost would appear to be inadequate. Not only would the railroads have a legal right to ask for rates to cover depreciation charges

[42] *Ibid.*

based upon these increasing prices and probably to insist on accounting regulations making for such an allowance, but it would appear to be sound regulatory policy to demand that course. Traditional accounting practice which bases depreciation charges on original costs should be no deterrent. Indeed, it may be that accountants could well undertake some study in regard to the wisdom of using original costs where these costs, as compared to values, become obsolete. Facts may demand a change in accounting technique.[43]

Unless prices rise above present levels, the Commission's orders respecting depreciation charges may be sound, both legally and economically. If prices should continue the rise inaugurated in the last few years, the accounting regulations of the Interstate Commerce Commission may need modification.

If the railroads become legally entitled to higher depreciation charges in the event of further rising prices, and if the railroads themselves refuse to make these charges, in the interest of sound railroad finance, the Commission may well require these higher charges through accounting regulation. If sufficient revenues cannot be collected to cover the real cost of railroad service with present rates, it would seem to be the duty of the Commission to increase railroad rates. If the pressure of competitive services makes it impossible to collect these rates, and if rail service is necessary to an adequate transportation system for the country, as is certainly the case, then it may be necessary to regulate more strictly the rates of competitive transport services to allow the railroads to earn reasonable operating expenses and a fair return on the fair value of the property used and useful in the public service.[44] Certainly, in case of a protracted fall in prices, the railroads would have no legal right to ask for more than depreciation charges based on these lower prices, and a fair return figured on a valuation reflecting this change in price levels.

[43] A new accounting technique, giving effect to changing price levels, has recently been advanced by an able accountant, H. W. Sweeney, in his pioneering book *Stabilized Accounting* (New York: Harper and Brothers, 1936).

[44] After or coincidentally bringing pressure to bear on the carriers to adopt some of the economies suggested by the investigations of the office of the Coordinator of Transportation.

Prospective Residential Construction

By FRANK J. HALLAUER*

PROSPECTIVE residential construction depends upon the need for new accommodations and the conversion of such need into demand.

Need here includes new accommodations necessary to house the increase in families and to replace accommodations which for one reason or another pass out of use for residential purposes. Increase in families is made up of increase in population and decrease in persons per family, while replacements are for accommodations destroyed by fire and storm, accommodations demolished to make way for new construction, and accommodations converted to other uses, also vacant accommodations awaiting such disposition. Need is more or less rigid. That is, customs or habits do not change rapidly or violently. We may observe certain changes taking place, perhaps in materials, in style, in size of accommodations, etc., but the total effect is a gradual change, if any, in the relation between increase in families and housing units needed.

On the other hand, demand for housing accommodations is flexible. That is, a certain increase in population sets up an equivalent need for housing measured by established standards as to living accommodations, but unfavorable economic conditions, a war emergency, or some other abnormal condition may retard demand. Excess population may be taken care of temporarily by doubling up or may be housed in dwellings that would normally have passed out of use. The need exists but there may be a lag in demand or in the conversion of need into construction.

Increase in population has always been the primary factor in the need for new residential construction and prior to 1930 completely obscured all other factors. Up to this time it had not been necessary to consider other factors. But since 1930 population increase has been falling off rapidly. The prospective increase for the present decade is only about half what it was from 1920 to 1929, and population is approaching stability at about 1960.

This change in population trend has directed attention to the second factor, the number of persons per family. This factor has been operating for over 50 years but did not receive attention until the last decade. The number of persons per family has been declining quite persistently at a rate of about 5% in a decade. Obviously, the factor becomes larger as population becomes larger. For instance, with 1930 population double that of 1890 the same decrease in persons per family adds twice as many families in 1930 as in 1890. During the present decade decrease in size of family will be about equal in importance with population increase in setting up need for additional living units.

With these changes taking place and because of the importance of residential construction in the problem of unemployment, it becomes particularly important to analyze all factors which determine volume of such construction. Fortunately, the Bureau of Labor Statistics has compiled permit records since

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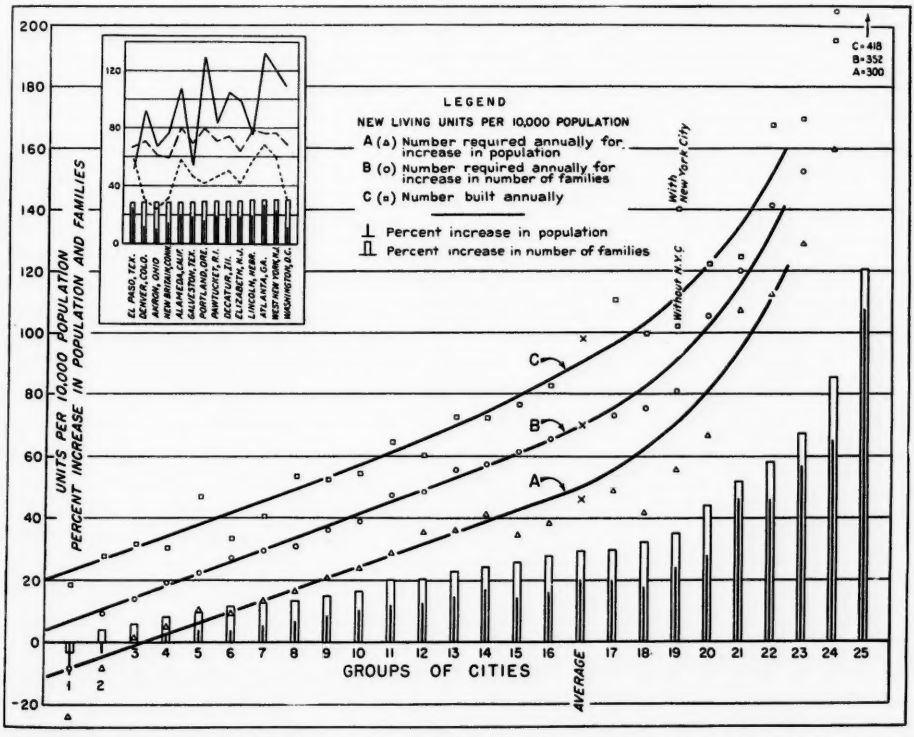
See two previous articles on this subject by the writer: "Population and Building Construction" 10 *Journal of Land & Public Utility Economics* 35-41 (February, 1934) and 12 *Ibid.* 12-18 (February, 1935

1920 for 257 cities, representing approximately half the urban population of the country. Population and family data for these cities are available from Census publications for the decade 1920 to 1929. Here then is the first opportunity for accurate analysis of actual construction in relation to increase in population and families.

For one reason or another 14 of the cities had to be thrown out. The remaining 243 cities were arranged in order of percent increase in families and then combined in groups of 10, with only 3 in the last group. Averages for the groups are plotted on Chart I where the vertical line represents per cent increase in population and the bar represents per cent increase in families.

In order to permit direct comparison, one city with another, or one group with another, all factors are then expressed in terms of 10,000 population. For example, an increase of 25% in population, over a decade, for a city of 100,000 having 4 persons per family unit is equivalent to a need for 6,250 new units, 625 new units per 10,000 population, or 62½ units annually. Line A represents the conversion of increase in population to living units required annually for 10,000 population. Similarly, Line B represents increase in families in terms of living units required annually per 10,000 popu-

CHART I



RELATION OF NEW RESIDENTIAL CONSTRUCTION TO INCREASE IN NUMBER OF FAMILIES FOR CITIES OF 25,000 POPULATION AND OVER – 1920 TO 1930

lation. The difference between A and B represents the construction need attributable entirely to decrease in persons per family. It will be noted that this factor is rather uniform throughout the chart, or was quite independent of population increase.

Line C represents actual construction in units per 10,000 population. The difference between B and C includes the factors of replacement, conversion, and change in vacancy. Very little is known about replacements, and unfortunately vacancy data are not very satisfactory. There was a serious shortage of accommodations as of 1920, an after effect of the war, and in 1929 there was something of a surplus vacancy. Such data as are available suggest that change in vacancy accounts for the larger portion of the spread between B and C and that replacements were equivalent to only about 5 units annually per 10,000 population.

Eventually replacements must be the primary factor in determining needed residential construction, and it should receive careful study. More than half our dwellings are less than 35 years old so that replacement for age has not had time to develop fully. On the other hand, such replacements as have occurred are necessarily associated with rapid growth and may not be a safe index of probable replacement age. In any case the replacement factor is not likely to increase rapidly during the present decade over what it was from 1920 to 1929, so that Chart I should be a fairly safe guide to needed residential construction up to 1940. With some allowance for increasing replacement because of age, a reasonably accurate forecast of needed construction can perhaps be made for 1940 to 1950.

It should be emphasized particularly that any forecast is subject to unforeseeable changes, which is the primary reason for an analysis such as represented by Chart I. With the factors segregated, correction can be made at any time for unexpected changes in any factor, for example, unusual destruction by fire or storm, a change in immigration policy that would affect population trend, or reversals of farm-to-city migration.

Population trend is forecast with considerable confidence, subject to possible unexpected epidemics, wars, restrictions on immigration, or other such factors. The forecasts now are for a population increase of approximately 9 million from 1930 to 1940 and 7 million from 1940 to 1950. It is assumed that these increases will be non-farm, with little change in farm population.

Non-farm population in 1930 was 92½ million. An increase of 9 million is approximately 10%, which is the same as for Group 10 on Chart I. Construction for Group 10 was 56 units per 10,000 population. The difference between B and C is 16 units and 11 of these are for restoration of normal vacancy which would not be repeated in the present decade, leaving a prospective construction need of 45 units per 10,000 population, or approximately 420,000 units annually for the decade, compared with 800,000 units annually during the last decade.

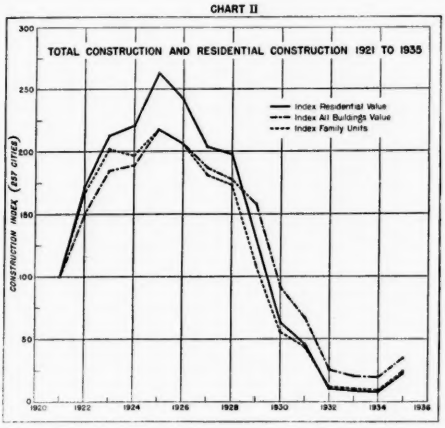
The anticipated increase of 7 million from 1940 to 1950 is 7% of the 102 million non-farm population estimated for 1940. Chart I shows a corresponding construction of 48 units. Deducting a vacancy factor of 10 leaves 38 units, or approximately 390,000 units as a minimum. Assuming that replacements were 5 units per 10,000 population from 1920 to 1930 and that the factor will double in the next decade, this would increase needed construction for 1940 to 1950 to 43 units per 10,000, or 440,000 annually.

Construction Cycle

The estimates of 420,000 and 440,000 as needed construction annually do not mean that the need will be converted into demand or actual construction at a uniform annual rate. As previously stated, demand is flexible, which accounts for construction cycles. During unfavorable economic conditions families may double up or occupy quarters they would not otherwise occupy, with the result that demand is delayed. Reverse the conditions and construction may run ahead of need. Lag in new construction is also permitted for a time by absorption of vacancy which is again built up at the other end of the cycle. Need, as made up of increase in families and replacements, has increased at a fairly uniform rate up to 1930. In all probability it will continue to move uniformly after 1930 although there is a rather sharp change in direction at about that point. This sharp break is explained largely by the change in immigration laws, and sharp breaks of appreciable magnitude are not likely to occur except for similar reasons. On the other hand, demand or actual construction can be expected to move in cycles, above and below normal need, just as has been the experience in the past.

The indices for total building construction and for residential construction separately, for the period 1920 to 1935, are plotted on Chart II. The chart shows almost one cycle but analysis of the cyclical movement requires a record of experience covering more than one cycle. It will be noted that residential construction follows the general trend for all building, going a little higher on the upswing and a little lower on the downswing. There should be fairly close general agreement because residential is a large part of the total, and the same factors are operating in both. Assuming that such is the case, the cyclical movement of total construction can be taken to represent a corresponding movement in residential construction, and records for total construction are available back to 1865, as plotted on Chart III.

CHART II



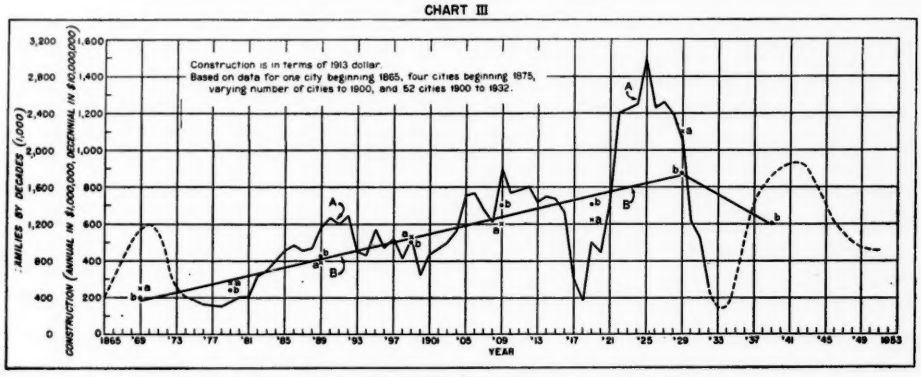
On Chart III, Curve A represents actual construction for 52 cities.[1] Points "a" are totals by decades, or annual averages, by decades, depending on which scale is used. Points "b" are estimated requirements for new dwelling units by decades to care for increase in number of families.[2] That is, points "a" are in dollar value and points "b" in family units. The two show practically identical trends and a relationship of approximately $5,000 of construction per family unit.

It will be noted that points "b" fall very close to a straight-line trend representing the almost uniform increase in

[1] Actual construction is computed on the basis of population for 52 cities and Riggelman's per-capita expenditures for four cities beginning with 1875, for additional cities at intervals, and for 52 cities beginning with 1900. (Riggelman, John R., "Building Cycles in the United States, 1875-1932," 28 *Journal of the American Statistical Association* 174 (June, 1933).) Curve from 1865 to 1875 is based on records for New York. Expenditures are in terms of a 1913 dollar.

[2] Number of families is arrived at from Census data on population and size of family.

CHART III



CONSTRUCTION CYCLE AND INCREASE IN NUMBER OF FAMILIES SINCE 1865

families. Average volume of construction follows the same trend and the two show a close agreement up to 1899. Construction was deficient for both decades 1900 to 1909 and 1910 to 1919, and deficiency as of 1919 is the sum of the two. However, it is found that construction and increase in families balanced as of 1915, so that the total deficiency as of 1919 accumulated after 1915. This accounts for the serious housing shortage as of 1920 mentioned in the analysis of Chart I. Industrial prosperity and the backlog of accumulated housing needs explain the upswing in volume of construction which ended with construction in excess of families as of 1929.

On Chart III, the line B represents need or requirements and the uniformity in trend indicates that need is more or less rigid. The irregular line A, representing annual construction, indicates the flexibility of demand by wide variations from the average. Extension of line B to 1940 or 1950, based on estimates of population as of those years, should correspond with construction forecasts arrived at by Chart I. But Chart III is useful primarily in forecasting the cyclical movement, or the probable variations from average.

As mentioned previously, the forecast is for an urban (all non-farm) population of 102 million by 1940 compared with 92.6 million in 1930. Assuming that persons per family was 3.8 in 1930 and will be 3.6 in 1940, the number of families was 24,300,000 in 1930 and will be 28,300,000 in 1940, an increase of 4,000,000 families, or 16½%. With the same rate of increase, the numerical increase in families for the 52 cities will be 1,300,000 from 1930 to 1940 and, assuming a normal balance between construction and need will be reached as of 1939, construction for the decade should be the equivalent of 1,200,000 units (1,300,000 less the 110,000 carry-over is 1,190,000). At $5,000 of construction per unit, probable total building construction for the 52 cities during the decade is estimated at $6,000,000,000. The total for 1930 to 1935, inclusive, has been $1,600,000,000, leaving $4,400,000,000 for the balance of the decade.

If this volume is to be attained, the recovery must be rapid, with a peak not later than 1939 more than twice the average for the decade. Such a recovery would likely be followed by quick reversal to lower levels. However, the balance will probably not be reached in 1939. Building cycles do not correspond with the decades. The current

cycle, if it is to agree with past experience, should run from 1933 or 1934 to about 1951, with the crest about 1941. Hence the shortage need not be wiped out entirely by 1941. Wiping out the shortage involves an accumulation in normal vacancy and this might be continued beyond 1942, in which case the average annual construction for this decade would be less than $600,000,000, the difference being carried over into the next decade.

It then becomes necessary to go beyond 1940.

The forecast is for an urban population of 109,000,000 by 1950. If persons per family drops to 3.45 by that time, the increase in families will be 13% over 1940. A corresponding increase for the 52 cities is 1,200,000 families and volume of construction should be $6,000,000,000, which is the same as for the present decade, so that an annual average of $600,000,000 would seem to be an approximate normal for 1930 to 1949 and is about what it was from 1900 to 1919.

Perhaps the current cycle will be something of a combination of previous cycles. It starts at such a low point that the upswing should be more like that after 1918 than after 1879 or 1900. On the other hand, it should flatten out at the crest more like the earlier cycles than the last one. A suggested pattern is indicated on Chart III, assuming the cycle will run from 1934 to 1952, with the peak at the half-way point, and average volume approximately $600,000,000 annually. Applying this pattern to the 8,600,000 units forecast by Chart I for the two decades 1930 to 1949, the probable construction annually, by number of living units, is approximately as follows:

ESTIMATED PROSPECTIVE RESIDENTIAL CONSTRUCTION: Dwelling Units 1930-1949

1930	425,000	1940	680,000
1931	180,000	1941	700,000
1932	100,000	1942	700,000
1933	100,000	1943	680,000
1934	100,000	1944	600,000
1935	210,000	1945	520,000
1936	355,000	1946	450,000
1937	500,000	1947	400,000
1938	600,000	1948	360,000
1939	650,000	1949	340,000
	3,220,000		5,430,000

Obviously there is no intention to suggest that estimates are actually carried to ten thousands. The figures represent a distribution of the estimated 8,600,000 units to a suggested pattern as a smooth curve. Actual construction may be above or below the estimated total and, whatever it is, the annual figures are not likely to make a smooth curve, but will vary above and below the curve as a trend.

II. Regulation of Interstate Movements of Natural Gas

By C. EMERY TROXEL*

CHARACTERISTIC of natural gas utilities is the transportation of natural gas across one or more state borders since the nation's natural gas fields are located largely in sparsely settled areas remote from markets for gas consumption. This movement of gas across state lines touches the problem of governmental control of the natural gas industry at two points. First, it is significant principally because of its bearing upon rates within a state. When a corporate system has an interstate pipe-line company serving a number of controlled distribution companies, the pipe-line company in the absence of regulation is in a position to fix freely the wholesale rate to the retailing company. Since no federal regulation of natural gas pipe lines yet exists, these wholesale rates in past years have not been subject to effective supervision. Second, there is the relation between conservation and interstate transmission of gas which was recently a vital problem, for instance, in the Texas Panhandle.

The increasing absolute and relative amounts of natural gas moving in interstate commerce, which has principally resulted from recent rapid construction of long-distance gas-pipe lines, has drawn attention to this unregulated public utility business.[1] Because the United States Supreme Court has generally denied states jurisdiction in this matter, several attempts have been made to obtain federal regulation of interstate natural gas transmission lines. When the last Congressional session adjourned, a bill awaited attention of the House of Representatives that would have given the Federal Trade Commission control particularly of rates, service, and service extensions or abandonments of interstate high-pressure natural gas transmission lines.[2] Moreover, state governments would have had some assistance from the Federal Trade Commission in their efforts to control gas waste if this measure had been enacted. As the subsequent survey will reveal, until the Federal Government enacts measures to control natural gas companies operating across state borders, there will be no regulation of this significant link in the process of rendering natural gas service to consumers 100 to 1,200 miles distant from the sources of gas supply.

The data in Table I summarize the magnitude of interstate movements of natural gas and indicate the importance from a regulatory standpoint of interstate transportation of gas. In recent years natural gas moving in interstate commerce has constituted almost one-half the total consumption of this resource as public utility service. Furthermore, interstate movements of gas have ranged from 1/6 to 1/5 of the total amount of gas produced and delivered to customers. In fact, California is the only State with a sizable natural gas reserve from which no gas is transmitted beyond state boundaries.

* Assistant Professor of Economics, Wayne University.

[1] C. Emery Troxel, "Long-Distance Natural Gas Pipe Lines," 12 *Journal of Land & Public Utility Economics* 344-354 (November, 1936).

[2] 74th Cong., 2d Sess., H. R. 11662. After being favorably reported by the Interstate and Foreign Commerce Committee of the House, this bill with minor changes was again introduced into the House on May 12, 1936 as H. R. 12680.

TABLE I. VOLUME AND PERCENTAGE OF INTERSTATE MOVEMENT OF NATURAL GAS, 1921-1934
(In millions of MCF)*

Year	Total Interstate Movement	Public Utility Uses of Natural Gas†	Proportion of Interstate Movement to Public Utility Uses	Total Produced and Delivered to Consumers	Proportion of Interstate Shipments to Total Gas Produced
1921..	150	405	37.9%	662	22.6%
1922..	179	484	37.3	763	23.5
1923..	189	555	33.9	1,007	18.7
1924..	187	543	34.4	1,142	16.4
1925..	199	490	40.7	1,189	16.8
1926..	209	530	39.4	1,313	15.9
1927..	194	565	34.3	1,445	13.4
1928..	241	627	38.4	1,568	15.4
1929..	325	734	44.3	1,918	17.0
1930..	380	733	52.0	1,942	19.6
1931..	333	703	47.5	1,684	19.7
1932..	331	682	48.6	1,554	21.2
1933..	347	703	49.4	1,555	22.3
1934..	414	773	54.9	1,771	23.4

*U. S. Department of Commerce, *Mineral Resources of the United States*, Part II, 1921-1932; U. S. Bureau of Mines, *Minerals Yearbook*, 1933-35.

†This rough classification includes domestic and commercial natural gas consumption and the industrial consumption remaining after field, carbon-black, petroleum refinery, and electric power plant consumption have been deducted.

Some Early Interstate Commerce Cases

As background for discussing whether states or the Federal Government may regulate interstate movements of natural gas, consideration must be given to a few of the early cases relating to regulation of interstate commerce. Since certain powers delegated to the Federal Government by the United States Constitution were not definitely denied the states, the controversy soon arose as to exclusiveness of these delegated federal powers. In other words, may these powers be exercised in any way by the state governments and, if so, under what conditions? This problem is one of distinguishing between the limits of the police power of the states and the commerce clause of the Federal Constitution.

The first important case bearing on the limits of state regulation of interstate commerce was *Cooley* v. *Board of Wardens* (1851).[3] These words of Mr. Justice Curtis generalize the legal concept of division of power over interstate commerce between state and federal authorities:

". . . Whatever subjects of this power [the regulation of interstate commerce] are in their nature national or admit only one uniform system. . . may justly be said to be of such a nature as to require exclusive legislation by Congress. . . that the nature of this subject is such, that until Congress should find it necessary to exert its power, it should be left to the legislation of the states; that it is likely to be the best provided for, not by one system. . . but by as many as the legislative discretion of the several states should deem applicable. . . . "

The view expressed in the Cooley case indicates that state regulation of interstate commerce, presumably incidental regulation, may extend to local matters for which diverse regulations are justified. But the Cooley case by no means defined the extent of the "local" or "national" nature of interstate commerce regulations by the states.

Among the railroad cases, the decision in the Peik case held Wisconsin rate regulations constitutional on essentially the same principles enunciated in the Cooley case, i.e., the incidental and diverse character of the Wisconsin regulations in the absence of congressional action.[4] Ten years later, in the Wabash case, the United States Supreme Court held unconstitutional railroad rate regulations of Illinois which were similar to those in Wisconsin.[5] In brief, the court reversed the opinion pronounced in the Peik case; it indirectly decided, when it ruled the Illinois regulations unconstitutional, that until Congress legislates

[3] 12 How. 299 (1851). This case involved the right of the city of Philadelphia to levy pilot fees on boats entering the port.

[4] *Peik v. Chicago & Northwestern Ry. Co.*, 94 U.S. 164 (1876).

[5] *Wabash Railway Co. v. Illinois*, 118 U.S. 557 (1886).

there shall be no regulation of interstate railroad rates.[6] Thus, the Supreme Court in the Wabash case termed interstate railway rates a matter of national concern which required a "single, uniform scheme of regulation."

Natural Gas Cases on Interstate Commerce

This limited summary of the development of court opinion brings the study to a line of cases which deal with interstate transmission of natural gas. The United States Supreme Court has held, except in one case, that regulation of interstate movements of gas is outside the province of state control. First among important natural gas cases was the West case, which held the provision in the Constitution of Oklahoma restricting transportation of gas produced in Oklahoma to points outside the State to be an undue burden on interstate commerce.[7] Although the circumstances were dissimilar to those in the West case, the Supreme Court held in the Landon case that regulation of interstate gas movements was not within the powers of the State of Kansas.[8] Again in the Barrett case in 1924 the Supreme Court held adversely upon an order issued by the Kansas Commission fixing "gate" rates charged by the Cities Service system.[9] The opinion of the Court regarding regulation of rates on interstate movements of gas is well illustrated by the following excerpt:

". . . The transportation, sale, and delivery constitute an unbroken chain, fundamentally interstate from beginning to end, and of such continuity as to amount to an established course of business. The paramount interest is not local but national—admitting of and requiring uniformity of regulation. Such uniformity, *even though it be the uniformity of governmental non-action*, may be highly necessary to preserve equality of opportunity and treatment among the various communities and states concerned." (Italics supplied.)

In 1919 West Virginia passed a law which declared that natural gas consumers of that State should have preference over consumers outside the State in the event of a reduced supply of gas.[10] The United States Supreme Court invalidated this statute on the ground that it constituted an unjustified interference with interstate commerce.[11] The views of the dissenters (Justices Holmes, Brandeis, and McReynolds) in the West Virginia case merit consideration, particularly the statement of Mr. Justice Holmes which follows:

". . . I see nothing in the commerce clause to prevent a state from giving preference to its inhabitants in the enjoyment of its natural advantages. If the gas were used only by private persons for their own purposes, I know of no power in Congress to require them to devote it to public use or to transport it across state lines. It is the law of West Virginia and of West Virginia alone that makes the West Virginia gas what is called a public utility, and how far it shall be such is a matter that the law alone decides."

Even the field-gathering lines supply natural gas to an interstate transmission line and gas which is destined to enter

[6] Subsequent Supreme Court decisions regarding state railroad rate regulation deal particularly with the effect of intrastate rates on interstate commerce. These cases have no immediate bearing upon the existing regulatory situation in the natural gas industry.

[7] *West v. Kansas Natural Gas Co.*, 221 U.S. 229 (1910). This opinion on the interstate gas transportation restrictions of the Oklahoma Constitution was reiterated in *Haskell v. Kansas Natural Gas Co.*, 224 U.S. 217 (1912).

[8] *Pub. Util. Com. v. Landon*, 249 U.S. 236 (1918).

[9] *Barrett v. Kansas Natural Gas Co.*, 265 U.S. 298, P.U.R. 1924 E 78. The continual conflict between the Cities Service system and the Kansas Commission over "gate" rates for natural gas indicates one of the principal factors thwarting effective state regulation of natural gas utilities.

[10] West Virginia Acts 1919, c. 71.

[11] *Pennsylvania v. West Virginia*, 262 U.S. 553, P.U.R. 1923 E 23. Mr. Justice Brandeis pointed out the common law obligation of West Virginia to customers who are its own citizens.

these interstate pipe lines is subject only to federal regulation.[12] Wherever the gas is a". . . steady flow ending as contemplated from the beginning beyond the state line . . . ," it is a commodity which moves in interstate commerce. Thus, a state has no control over natural gas at the well or in field-gathering lines if these are part of a "contemplated" interstate system.

Among decisions of the United States Supreme Court which generally have held state regulation of interstate natural gas transmission to be beyond the limits of the police power of a state, the Pennsylvania Gas case is the only exception. Gas was being transported 50 miles from the Company's Pennsylvania wells to Jamestown, New York, where the gas was served directly to consumers. In these words Mr. Justice Day described the special conditions of this case which permitted the State of New York to regulate natural gas rates that have an influence on interstate commerce:[13]

". . . In the instant case the gas is transmitted directly from the source of supply in Pennsylvania to the consumers in the cities and towns of New York and Pennsylvania . . . . Its transmission is direct and without intervention of any sort between the buyer and seller."

". . . Despite the state's regulation of interstate commerce, the court [the Court of Appeals of New York] believed this control to be local in character and requisite to the 'public interest' . . . . And we agree with that court that until the subject matter is regulated by congressional action, the exercise of authority conferred by the state upon the Public Service Commission is not violative of the commerce clause of the Federal Constitution."

A fundamental consideration in the Pennsylvania Gas case seems to have been the transportation and sale of gas by a single company, because in subsequent cases, when the same corporation controlled both the transporting and distributing companies, state regulations have been declared void.[14] Later decisions offer no explanation of this exception among decisions on interstate transportation of gas. Through all succeeding cases the groups seeking state regulation of gas moving interstate always cited in their behalf the Pennsylvania Gas decision. Finally, the United States Supreme Court declared in the East Ohio Gas Company case that the decision in the Pennsylvania Gas case ". . . must be disapproved to the extent that it is in conflict with our decision here."[15] This statement removed all belief that the Supreme Court might ultimately approve state regulation of gas transported across state lines.[16]

Limits of Interstate Commerce

In the judgment of the courts, where does interstate commerce end and intrastate commerce begin? If regulation of rates of interstate pipe lines is beyond

[12] *United Fuel Gas Co. v. Hallahan*, 257 U.S. 277 (1921); *Eureka Pipe Line Co. v. Hallahan*, 257 U.S. 265 (1921).

[13] *Pennsylvania Gas Co. v. Pub. Serv. Com. of Pa.*, 252 U.S. 23, P.U.R. 1920 E 18.

[14] In *Peoples Natural Gas Co. v. Pub. Serv. Com. of Pa.*, 270 U.S. 550, P.U.R. 1926 D 187, there is a minor exception to the usual Supreme Court rule. The natural gas pipe line originated in West Virginia and passed into Pennsylvania. The Pennsylvania Commission had ordered the Company to continue serving Johnstown. In the words of Mr. Justice Van Devanter the Supreme Court said: "The Supreme Court of the state [Pennsylvania] has found that more than enough gas goes into the mixture to meet the requirements of the order. . . . We think the finding has ample support in evidence. . . . In these circumstances the conclusion is unavoidable, we think, that the order does not interfere with or affect interstate commerce in which the company is engaged."

[15] *East Ohio Gas Co. v. Tax Com. of Ohio*, 283 U.S. 465 (1931).

[16] *Re Colorado Interstate Gas Co.* (Colo.), P.U.R. 1933 E 349 and *Re West Ohio Gas Co.* (Ohio), 1 P.U.R. (N.S.) 61 (1934) are two significant recent state commission opinions summarizing the limit of state regulation of interstate movements of natural gas.

the authority of the state, it is essential, particularly for purposes of rate regulation, to determine the physical limits of state commissions' jurisdiction.

The United States Supreme Court expressed the opinion in the Landon case that interstate commerce ended when the gas passed into local mains.[17] This judgment was more precisely stated in the East Ohio Gas Company case when Mr. Justice Butler summarized this phase of the Court's opinion:[18]

". . . When the gas passes from the distribution lines into the supply mains, it necessarily is relieved of nearly all the pressure put upon it at the stations of the producing companies, its volume thereby is expanded to many times what it was while in the high pressure interstate transmission lines, and it is divided into the many relatively tiny streams that enter the small service lines."

In the light of these cases it may be stated that intrastate commerce in natural gas begins when the gas enters the local mains, i.e., when the pressure is reduced low enough to permit use of the gas in consumers' burners. States or municipalities, therefore, may exercise their police power to regulate retail or consumer rates, whether or not the gas has been transmitted as an article of interstate commerce. In a recent case, however, the Colorado Commission concluded that it had no jurisdiction over rates charged industrial customers served directly by a pipe-line company.[19] Although this commission opinion appears to conflict with Supreme Court decisions cited above, it illustrates the confusion which may arise respecting interstate commerce limits as measured by this variable, relative physical fact of gas pressure.

Rate Regulation of Affiliated Companies

Since state commissions according to previously noted court opinions may not directly regulate rates charged by an interstate pipe line—even though the distributing company and pipe line are controlled by identical corporate interests—have state public service commissions any protection against an unreasonable "gate" rate charged by pipeline companies? The dominantly interstate character of the natural gas industry and the absence of any regulation of this feature present a perplexing problem to state utility commissions.

In the Western Distributing case the Kansas Public Service Commission again sought to regulate natural gas wholesale rates fixed by the Cities Service system.[20] This system controls both the Western Distributing Company, which serves customers in El Dorado and a number of other Kansas towns, and the Cities Service Gas Company which wholesales gas to the Western Distributing Company. When the Kansas Commission was asked to raise gas rates in El Dorado, it dismissed the petition because evidence was not presented to show that the wholesale rate was reasonable. In upholding the decision of the Kansas Commission the United States Supreme Court said:

". . . It is enough to say that in view of the relations of the parties and the power implicit therein arbitrarily to fix and maintain costs as respects the distributing company which do not represent the true value of the service rendered, the state authority is entitled to a fair showing of the reasonableness of such costs, although this may involve a presentation of evidence which would not be required in the case of parties dealing at arm's length and in the general

[17] *Supra*, n. 8.

[18] *East Ohio Gas Co. v. Tax Com. of Ohio, supra* n. 15. The same opinion is expressed in *State Tax Com. of Mississippi v. Interstate Natural Gas Co.*, 284 U.S. 41 (1931).

[19] *Re Colorado Interstate Gas Co.*, P.U.R. 1933 E 349.

[20] *Western Distributing Co. v. Pub. Serv. Com. of Kansas*, 52 Sup. Ct. Rep. 283, P.U.R. 1932 B 236.

and open market, subject to the usual safeguards of bargaining and competition."

Thus, when confronted with corporate interlocking, the state commission is privileged to demand evidence as to reasonableness of the "gate" rate. What showing must be made to establish reasonableness? Is the Kansas Commission empowered to demand the records of this interstate pipe line? May representatives of the Commission investigate records of the pipe-line company even though the records are kept in another state? The United States Supreme Court has not stated its position on these significant points.

Following the Western Distributing Company decision, the Kansas Public Service Commission determined the value of property and expenses of operation of the Cities Service system's pipeline companies.[21] In addition to the Kansas Commission's investigation, the Cities Service Company, which is the Cities Service system's top holding company, apparently submitted for the rate proceeding its records or excerpts therefrom. In the United States District Court, to which the case was finally carried, the 40-cent "gate" rate was declared reasonable.[22]

One year after the Western Distributing Company decision, the following words of the United States Supreme Court in the Columbus Gas and Fuel Company case further clarified the problem of state determination of wholesale rates for natural gas sold and purchased by affiliated companies:[23]

". . . The process of ascertaining that return [the return on rate base valuation] did not end with an inquiry into the property and expenses of the affiliated seller. It became necessary to examine the property and expenses of a second affiliated company, the United Fuel Gas Company . . . . What was fairly due from Columbus for gas delivered at the gateway is not susceptible of ascertainment without tracing the supply to its sources far away."[24]

The Supreme Court indicated in its judgment as to the valuation of leaseholds possessed by the United Fuel Gas Company (a corporate affiliate of Columbus Gas & Fuel Company) that the wholesale gas rate might be established by the state commission. On the basis of this opinion it is believed that the United States Supreme Court will permit a state public service commission, when affiliated companies are involved, to require a showing of facts, even to make a thorough investigation, as to costs of gas moved interstate.

Several state commissions have employed the control made available by the Western Distributing and Columbus Gas & Fuel decisions. Because the Lone Star Gas Corporation controlled both the transmission and distribution companies, the Oklahoma Corporation Commission tentatively ordered the Community Gas Company to pay the Lone Star Gas Company a 30-cent instead of the prevailing 40-cent "gate" rate per MCF of gas.[25] Similarly, the Municipal Gas Company was ordered by the Texas Railroad Commission to pay (or record as an expense) a wholesale gas rate of 32 cents instead of the 40 cents per MCF to an affiliated pipeline company when an independent company offered to furnish the gas supply for 32 cents per MCF.[26] Corporate

[21] *Re Cities Service Co.* (Kas.), P.U.R. 1933 A 113.

[22] *Wichita Gas Co. v. Pub. Serv. Com.* (U.S. Dist. Ct. of Kas.), P.U.R. 1933 B 225.

[23] *Columbus Gas & Fuel Co. v. Pub. Util. Com. of Ohio*, 4 P.U.R. (N.S.) 152; 54 S. Ct. 763 (1934).

[24] See also *Dayton Power & Light Co. v. Pub. Util. Com. of Ohio*, 3 P.U.R. (N.S.) 279; 54 S. Ct. 647 (1934).

[25] *Re Lone Star Gas Co.*, P.U.R. 1933 C 1. In *Lone Star Gas Co. v. Corp. Com. of Oklahoma*, 7 P.U.R. (N.S.) 490 (1935) the Oklahoma Supreme Court upheld the decision of the Commission.

[26] *Municipal Gas Co. v. Wichita Falls*, 9 P.U.R. (N.S.) 33 (1935).

control of the Central States Gas Utilities Company by the Panhandle-Eastern Pipe Line Company was largely responsible for the order of the Missouri Public Service Commission that the latter Company extend service to the municipally owned distributing plant in Fulton.[27] In the recent Cleveland natural gas rate investigation the Ohio Commission believed that it was ". . . entitled to a showing of the fairness and reasonableness of the price of gas . . ." charged by Hope Gas Company to its affiliate the East Ohio Gas Company.[28]

Gas Conservation Laws and Interstate Commerce

Similarly, one reason for denial of state control of gas production designed to restrict gas waste in the Texas Panhandle field has been an avowed interference with interstate commerce. Though this regulatory problem is not directly related to regulation of natural gas prices, a reduction in gas waste would lengthen the period of, or increase the amount of, available natural gas supplies.

Since the nine long-distance pipe lines receiving their gas from the Texas Panhandle field, the nation's largest "dry" gas field, negotiated gas purchase contracts with some of the well owners (often these pipe lines have corporately affiliated gas-producing companies), the Texas Legislature has sought during the last four years some legal means of forcing pipe lines to purchase gas from other well owners in the field. Otherwise, independent well owners would be left to choose between wasteful utilization of gas or idleness of their wells. In 1931 Texas passed its "Common Purchaser" Act,[29] which required that a gas pipe line purchase gas ratably from all gas producers of a field served by it. Pipe-lines companies challenged the law and a federal court declared that the ". . . State cannot burden interstate commerce under the guise of police regulation."[30] Subsequently, enforcement of a similar law, the "Market Demand" Act,[31] was enjoined permanently by a federal district court because of unjustified interference with interstate commerce.[32] The defiant attitude of pipeline companies toward economical utilization of Panhandle gas prompted the Texas Legislature to pass the "Sour Gas Law,"[33] which permitted gas well owners to extract natural gasoline from their gas and to blow the remaining gas to the air when there was no market for light or fuel usage.[34] Chiefly as a result of this law the percentage of gas wasted to total production was 48.5 in 1933 and 55.1 in 1934 in the Panhandle field. Even though this tragic waste of gas was endangering their gas reserves, pipe-line companies apparently did not accede to a Texas law enacted in May, 1935 which reduced this flagrant dissipation of gas,[35] because proration of gas

[27] *City of Fulton v. Panhandle-Eastern Pipe Line Co.*, P.U.R. 1933 A 256.

[28] *East Ohio Gas Co. v. Cleveland*, 4 P.U.R. (N.S.) 433 (1934).

[29] Vernon's Ann. Civ. Stats. of Texas, 6049a.

[30] *Texoma Natural Gas Co. v. Railroad Com.*, 59 Fed. (2d) 750 (1932).

[31] Vernon's Ann. Civ. Stats of Texas, 6049a, § 8.

[32] *Canadian River Gas Co. v. Terrell*, 4 F. Supp. 222 (1933).

[33] General and Special Laws of Texas, 43d Leg., 1st Sess., 1933.

[34] This is known generally as natural gasoline "stripping." Before gas is transmitted through long-distance pipe lines, it is treated for extraction of natural gasoline. Removal of the gasoline content makes natural gas a better fuel. This remaining gas is high in methane content and possesses 900 or more B.t.u. per cubic foot. Another sizable amount of Panhandle gas was wastefully utilized to manufacture carbon-black.

[35] General and Special Laws of Texas, 44th Leg., v. 1, c. 120. Ratable gas purchasing by pipe lines in any field is required. Gas waste by natural gasoline "stripping" plants and carbon-black production except from "sour" gas are prohibited. If the gas-oil

(*Footnote 35 continued on page 27*)

production to provide a market for gas of independent well-owners was again declared void.[36]

Admitting that reasons other than interference with interstate commerce have also guided the courts in these denials,[37] are not the problems of gas wastage and difficulties of independent well owners in the Panhandle of such a nature as to make the problem a "local" one which will permit "diverse" regulation? In the absence of federal regulation it seems unfortunate that state regulation of production of natural gas destined to move in interstate commerce is unconstitutional and thus that a legal solution for distributing natural gas production among all well owners of the Panhandle field to avoid tremendous gas wastage has been blocked. An oil proration statute, on the other hand, has been sustained because it was deemed within the state's police power to regulate production of crude oil.[38] In comparison with proration regulations, it would seem that natural gas conservation statutes which deal equitably and directly with production of gas may be upheld in so far as interstate commerce is affected.

Proposed Federal Regulation

Because state regulation of "gate" rates for natural gas moving in interstate commerce has generally been denied, several attempts have been made to obtain federal regulation of the interstate business of natural gas utilities. First, Senator Capper of Kansas introduced in the Senate in December, 1930 a bill providing for regulation of interstate business of natural gas pipe lines.[39] The principal features of the proposal were: (a) establishment of a Federal Gas Pipe Line Commission consisting of three men, to be appointed by the President with consent of the Senate; (b) this commission would have full authority to supervise and control purchase, production, sale, and transportation of natural gas; and (c) each pipe line would be required to obtain a certificate of convenience and necessity from the commission. This bill was never voted upon by the Senate. Fearing that their control of natural gas companies would vanish as had their control of railroads, state commissions, although troubled by their inability to regulate interstate activities of natural gas utilities, opposed consideration and passage of the Capper Bill. It was believed that this "purely local" problem could "safely be entrusted" to state commissions.[40]

The initial House draft of the Wheeler-Rayburn bill providing regulation of public utility holding companies proposed control by the Federal Trade Commission of interstate movements of natural gas.[41] This section of the measure, Title III, was not included in the final form of the Public Utility Act of 1935.[42] On March 6, 1936, however, Representative Lea of California introduced in the House a measure which is essentially the same as Title III of the

(*Footnote 35 continued from page 26*)
ratio of an oil well does not exceed 10,000 cu. ft. to 1 barrel, the gas may be wasted. Depending on the production of wells from the same pool and the rules of the Railroad Commission, the gas-oil ratio, which simply means the gas may be wasted to recover oil, is fixed between 10,000 to 1 and 100,000 to 1.

[36] *Consol. Gas Util. Corp. v. Thompson*, 14 F. Supp. 318 (1936). In *Henderson Co. v. Thompson*, 14 F. Supp. 328 (1936) prohibition of the manufacture of carbon-black from "sweet" gas was upheld.

[37] The courts have been convinced that pipe-line companies have not contributed to gas wastage in the Panhandle.

[38] *Champlin Refining Co. v. Corp. Com.*, 286 U.S. 210 (1932).

[39] 71st Cong., 3rd Sess., S. 5030.

[40] *Annual Report*, National Association of Railroad and Utilities Commissioners, 1931, p. 101.

[41] 74th Cong., 1st Sess., H.R. 5423, Title III.

[42] 74th Cong., 1st Sess., Public Act, No. 333.

original Wheeler-Rayburn measure, providing for regulation by the Federal Trade Commission of high-pressure interstate natural gas pipe lines.[43] On May 12, 1936 this bill with minor alterations was again introduced in the House after the Interstate and Foreign Commerce Committee had favorably reported upon it, but Congress adjourned before the proposal made further progress.[44]

The measure proposed that the Federal Trade Commission be empowered to fix reasonable rates or to eliminate any unreasonableness in service, rates, or facilities between localities or classes of service, for all natural gas companies operating high-pressure pipe lines in interstate commerce. For rate changes a 30-day notice was required with the commission having power to suspend proposed rates another five months. Permission of the Federal Trade Commission was needed for exportation or importation of natural gas to or from a foreign country. Based on an investigation of the "actual legitimate cost" of any high-pressure pipe line and on the filing by every company of original cost of all transmission property, the Commission would determine the cost of natural gas transmission.[45] Furthermore, "proper and adequate" depreciation rates were to be fixed for different classes of property used by these gas lines. A gas transmission company could be required to extend or improve its facilities to provide service for communities "immediately" adjacent to the company's lines, but an enlargement of facilities impairing rendition of "adequate" service to existing customers could not be required. Permits were needed to abandon a pipe line even though the abandonment be prompted by depletion of the gas supply. It was declared unlawful for any officer or director of an interstate gas transmission line "to receive for his own benefit" any securities issued by his company. Payment of dividends out of capital was prohibited.[46] The Commission, of course, could prescribe regulations for accounting procedures and the filing of periodic reports by these pipe-line companies.

If two or more states proposed to Congress compacts treating of conservation, production, transportation, or distribution of natural gas, the measure stated that it was the duty of the Federal Trade Commission to assemble information or to recommend legislation which would assist a realization of the objective of such compacts. This section of the proposed measure might have assisted state governments in their attempts to reduce waste or uneconomical utilization of natural gas.

Specific denial of power to the Federal Trade Commission to regulate sales of natural gas from low-pressure mains and the requirement that state commissions' views on accounting and depreciation regulation be given consideration were attempts to prevent infringe-

[43] 74th Cong., 2nd Sess., H.R. 11662. Regulations contained in the original measure (H.R. 5423, *op. cit.*), which related to issuance or purchase of securities, consolidations, assumption of liabilities, were not included in this bill. Also, the proposal to transfer administration of some interstate regulation to boards composed of delegates from states affected was omitted from this proposal.

[44] The bill was introduced on May 12, 1936 as H.R. 12680.

[45] Pipe-line companies might insist that cost of reproduction be given consideration, since many of the long-distance pipe lines were constructed during the present depression when construction costs had fallen.

[46] Presumably the Securities and Exchange Commission would add some security regulation to these proposed restrictions. A section of H.R. 11662 providing that officers and directors in any company authorized to underwrite or sell securities of a gas pipeline company could not be directors or officers of an interstate gas pipe-line company was omitted from H.R. 12680.

ment on existing state regulation. Probably the modest, but costly, amount of state regulation of interstate gas pipeline companies now available under the Dayton and Western Distributing decisions would have reverted to the Federal Trade Commission. Although state commissioners generally opposed the Capper bill, they and the National Association of Railroad and Utilities Commissioners favored passage of this measure. Although state commissioners, as Chairman Hoch of the Kansas Corporation Commission has said, would oppose ". . . vigorously any needless interference with State regulation," there is need for ". . . Federal jurisdiction over those matters in which under the Constitution Federal authority is the only one that can act."[47]

This bill for regulation of interstate natural gas pipe-line companies proposed to give the Federal Trade Commission the price and service control of these utility companies that is now denied state commissions. In this event the Federal Trade Commission would have become, in addition to its enforcement of anti-trust legislation, a public utility regulatory agency with the usual power to eliminate any "undue preference" and "unreasonable difference in rates, charges, services or facilities."

Nothing, however, was said in the bill on control of the right to construct pipe lines. Obviously, such deficiency occasionally might have led to duplication of pipe lines to large markets and to competitive strife of pipe-line systems, a condition which has been generally avoided elsewhere in public utility regulation.[48] Insufficient financial controls were proposed even though it be granted that Securities and Exchange Commission supervision is available. Regulation of interstate natural gas lines' securities contained in abandoned Title III of the original House draft of the Wheeler-Rayburn bill were noticeably absent here.

This measure was not designed to conserve natural gas. Recommendations of the Federal Trade Commission for discontinuance of waste and uneconomic use of gas, protection of independent gas land owners and producers, and elimination of competitive drilling were omitted from the bill.[49] Use of state compacts will not effectively control dissipation of gas, if previous experience with oil production control is repeated, because (1) such agreements are not easily obtained, (2) discovery of new gas fields would disturb an established compact, and (3) no state has been willing to stifle its oil industry to restrict wastage of gas produced in association with oil.

Although none of these measures designed to regulate interstate natural gas companies has been voted upon by either the House or Senate, the time does not appear to be remote when these companies will be regulated. Since about 50% of natural gas sold by utilities now moves in interstate commerce and since there has been a rapid recent growth of long-distance pipe lines, settlement of this regulatory problem has become imperative. Except as the

[47] 74th Cong., 2nd Sess., Hearings before a Sub-Committee of the Committee on Interstate and Foreign Commerce on H.R. 11662, p. 159.

[48] H. L. Doherty and his Cities Service system attempted to thwart construction and successful operation of Frank Parrish's Panhandle-Eastern line. Likewise, Columbia Gas & Electric has been charged with attempts to prevent Parrish's line from obtaining an adequate market in the Middle West. Also, both Northern Natural Gas, the victor, and Minnesota Northern Power were seeking natural gas franchises in the Twin Cities. Although there has been little duplication among long-distance gas lines, these fights suggest the possibility of such competition.

[49] Federal Trade Commission, *Utility Corporations*, Doc. 92, 70th Cong., 1st Sess., Part 84-A, pp. 614-5.

Dayton and Western Distributing cases represent a new trend, the Supreme Court has placed an insurmountable barrier against regulation of interstate gas companies. In fact, state regulation of pipe-line companies operating through two or more states probably is not desirable, since such a regulatory program would necessitate costly separate, if not dissimilar, investigations and controls by each state. Whatever the merits or weaknesses of state regulation of interstate gas lines, there is now only limited, if any, state regulation of these companies. Thus, unless federal regulation becomes a reality, these pipe lines will continue to be substantially free of regulatory controls when they fix "gate" rates for natural gas, make service extensions and standards, or expand or abandon a natural gas pipe-line system.

A succeeding article, the final one in this series, will be a study of state regulatory problems peculiar to natural gas utilities. Solution of such problems as gas leasehold or land valuation, depletion allowances, and treatment of natural gasoline revenue now is the task of state commissions. But a natural gas system completely or substantially interstate in character, in the event of federal regulation, must be subjected to regulation covering these points. Consequently, the coming article is an extension of this study of regulation of interstate gas business, although the problems to be studied have customarily been subjects of state control.

Author's Note: Since this article was written, Representative Lea has again introduced (on January 29, 1937) a bill (75th Cong., 1st Sess., H. R. 4008) which proposes regulation by the Federal Trade Commission of interstate transportation of natural gas. This bill is virtually a duplicate of the one which has been described and appraised in this article. The only significant improvement in the present proposal, compared with the preceding one, is the requirement that any interstate natural gas company must obtain a certificate of convenience and necessity from the Federal Trade Commission before a pipe line to the "market" of another company may be constructed or acquired.

Some Problems of Rural Land-Use Planning in the Northeastern Industrial Region

By LEONARD A. SALTER, JR.*

LAND utilization research, in a static sense, involves the description of the physical features of a given land area and the accompanying socio-economic pattern which prevails. In a dynamic sense, it deals with the competition of alternative uses of land and the present and potential forces affecting land use. In land-use planning both these types of land utilization studies are employed to indicate the best use to which an area of land may be put and to indicate the possibilities of altering or directing those influences which affect land use.

The movement toward rural land-use planning in the United States has gained increased momentum in the past few years. Simple descriptive land utilization studies have been made in nearly every state. More comprehensive studies dealing with the forces which have shaped the present land-use pattern have been carried on in certain regions. Land-use planning has progressed in the Lake States particularly. In Wisconsin, land utilization research has led to a conscious public direction of the uses to which land may be put through the institution of rural zoning. In other areas, programs of public purchase of farm lands for forests have been instituted as a curb on misuse of the land.

The accomplishments in rural zoning and public purchase have rightfully attracted much attention. In fact, it is becoming more and more common for land-use planning specialists to orient their work so that it will form a basis for one of these two types of programs. Meanwhile, rural rehabilitation and resettlement programs of the Federal Government have endeavored to alleviate suffering in rural problem areas which may be defined as extensive areas in which destitute populations are settled on land not suited to commercial farming. Land-use planning work has been organized as a part of these programs. The net result of these developments is that land-use planners now tend to stress rural problem areas as the place for their work and rural zoning laws or public purchases as their aims.

In the northeastern industrial region, land-use planning—i.e., recommending the best uses of land and creating directional policies—is undeveloped. For this area, the step from land utilization to land-use planning will depend upon the evolution of new principles, supplementary and complementary to those already established, and upon consideration of new or different methods of land-use direction than have been emphasized to date in the country as a whole.

The Northeastern Industrial Region

The area which the writer has in mind extends south and east of an imaginary line drawn from Augusta, Maine through Concord, N. H., Schenectady, N. Y. and Reading, Pa., to Wilmington, Del. It will be seen that this region includes the five southern counties of Maine and of New Hampshire, the whole of Massachusetts, Rhode

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Island, Connecticut, and New Jersey, 18 southeastern counties of New York, nine eastern counties of Pennsylvania, and one county in Delaware. Though one may disagree with this designation of the "northeastern industrial region," any changes made in the demarcation would not affect the central point of this discussion.

Those familiar with the economic geography of the United States will realize that this is the most highly industrialized and densely populated section in the country. Here are found 11 of the 33 principal industrial areas and 1/10 of the other important industrial counties as defined by the Census. Included are some 90 cities of over 25,000 population or about ¼ of all cities of similar size in the country; 300 cities of over 5,000 population or almost ⅓ of all cities of equal size are located in this area. With 20% of the nation's population and 1.3% of its land area, this region shows an average density of 590 persons per square mile, as compared with 41.3 for the country as a whole.

Within this small, thickly populated section are approximately 180,000 farms which occupy 13,000,000 of the 26,000,000 acres in the area. Fifty per cent of the land is in farms, which is comparable to the national figure of 55%. However, the farm population comprises less than 7% of the total population. It is a region with a sizable rural territory in which there are clusters of highly concentrated population centers as well as almost wholly depopulated districts. In Rhode Island, for example, only 5% of the population is in the western half of the State, and over ½ the population lives within six miles of Providence.

Complexity of the Land-Use Pattern

Rural land-use planning problems are complicated in the northeastern industrial region. Simple land-use description is made difficult because of the wide variety of uses which occur. Study of competing uses is extremely complex because economic use of the land is dependent primarily on other than its physical characteristics. In other parts of the country where much land-use planning work has been done, the choice between alternative uses has usually been limited to no more than farming or forestry and sometimes grazing or recreation. In an area such as the one in question, the competitive rural land uses are multiplied manyfold by urban and industrial influences. Consequently, on the basis of present knowledge, control or direction of the use of the land is nearly impossible.

Use of land in a rural town close to a city is affected by the presence of that city in two general ways. In one way, the city offers an easily accessible retail market for farm products and offers employment opportunities for farm families. In another, the city population reaches out into the rural town to find rural residences, to obtain parks and hunting and fishing areas, to get water supplies and water-power sources, and to purchase summer home and camp sites. These direct influences may be termed the "pulling" forces of the city, on one hand, as it draws rural economic interests toward it, and the "pushing" forces of the city, on the other, as it creates an effective demand for use of rural land.

An illustration of this is found in the rural town (township) of Waterford, Connecticut. In this town are 291 farms meeting the Census definition. None of these places is more than seven miles from New London with a population of some 30,000. Of the 291 farms, 60 farms sell milk and 47 sell milk direct to retail customers. Retail dairy farm-

ing is one of the highest-income-producing types of farms in the State. Some member of the family on 158 of the 291 farms works at outside employment. Here are two effects of the "pulling" influence of New London on this one town. In this same rural town, between 1931 and 1936, residential part-time farms increased by about 40%. During the same five-year period, 39 new occupants took up places of less than three acres outside the small settled village areas of the township. This growth is illustrative of the "pushing" forces of the city on this rural area.

In more indirect ways rural land use is affected by the structure of prevailing social, political, and economic institutions found in an urban-rural area. The rural areas of the state may be subsidized or discriminated against, depending in part upon the balance of power set up through existing political institutions. So far as rural social facilities are maintained at state expense, and particularly if the cities contribute heavily to state revenue, public service costs represent unimportant incentives to efficient land utilization.

In the matter of roads, of which more will be said later, there appears an interesting example of the indirect effect of urban centers on rural land use. In an area such as the northeastern industrial region, there are innumerable intercity trunk-line highways. These roads are built, not to serve the rural territory but to facilitate communication between cities. Nevertheless, these highways have a most important effect on use of land in the rural areas through which they pass.

The complexity of forces affecting rural land use in this region not only increases the number of commonly recognized types of uses but also requires consideration of various classes of these types. For instance, commercial agriculture is usually considered as one type of use, but actually various types of farming have distinctly different effects upon, and demands for, land use. In Windham County, Connecticut, for example, are large areas of land which a few years ago would have been classified as definitely unsuited to commercial farming. Within the past few years, however, much of this land has been taken up for commercial poultry farming, and quite successfully in many instances. In one of these towns, in the past five years, there has been an increase of from five to twenty-five specialized poultry farms.

Likewise, various classes of part-time farms must be distinguished in considering rural land-use problems. There are part-time farmers who own substantial homes on the main roads of our rural towns, and there are those who exist in tar-paper shacks just out of sight on the side roads. Because the several classes of part-time farmers have different economic demands for use of land, they must be considered separately by the land planner.

Mention may be made of another complicating factor which is not restricted to the northeastern industrial region but which nevertheless is of extreme importance—namely, the physical features of the land. In this part of the country, variations in soil and topography abound. It is an area characterized by many hills and valleys, and while some ridge-tops, slopes, and valley bottoms cannot be cultivated, other similar locations are easily tilled. Hardly any uniform area covers as much as a township. This fact adds further difficulty for the land planner because most statistics are presented by "minor civil divisions."

In a region where the physical and

institutional features are generally uniform and where the number of alternative types of uses is small, the problems of land-use planning are relatively simple. In such an instance, the number of competing uses for a planner to consider is small and the area over which his recommendations apply is large. In the northeastern industrial region, the reverse is true.

To illustrate some of these problems of rural land-use planning, let us consider one very small area in Connecticut. In this area of less than one square mile there is a destitute population of seven large families seeking meager shelter in seven shacks. The land is unsuited to commercial crop farming. The road through the area runs up a steep hill and is practically impassable several months of the year. All the families attempt to do some subsistence farming. This area has a destitute population, however small. It is rural. The land is unproductive. The children are numerous.

Within five miles of the area there is a city where over 1,500 are employed in factories, and seven miles distant there are factory jobs for 4,500. Within a radius of 15 miles are three other cities of over 100,000 population, and New York City is about 100 miles away. Within a mile, a paved road leads to all these points. In the middle of the area is a small but noticeably substantial home. It is a weekend and summer home for a family from New York City.

A land-use planner whose territory includes situations like this has no simple job. From the point of view of aiding a destitute population, the solution may not be land-use planning. Relief work, cash relief, vocational rehabilitation, resettlement, or some other type of social and economic assistance may be called for. From the point of view of efficient land utilization, the choice of alternatives is great. The existence of a summer home of New York people is indicative of an alternative use within private ownership. Improvement of the road through the area might open it up to urban workers seeking inexpensive home sites. The area is suitably located for a public forested park. All that can be recommended at present is that the area be taken into public ownership for park or forest purposes, into other private uses for summer homes or homes of commuters, or allowed to remain as it is with better provision for roads, housing, and outside employment.

There are many other problems in efficient land use in the northeastern industrial region besides those found in areas like the one described. While there are very many small areas of destitute populations like this one, it is not certain, in the first place, that the land-use planner should concentrate his attention on them. Secondly, if he does so direct his efforts, on what bases does he make his decisions?

New Principles to Meet Unanswered Problems

In an area primarily industrial and urban, rural land-use planning should consider land as a consumption good as well as a productive resource. In terms of land-use planning, we must consider the demands of the urban population as a most important factor, and we must look to the best means of satisfying those needs while at the same time improving rural conditions and insuring continuance of the valuable features of the existing rural pattern.

It has been said that our rural land-use planners should not consider forestry as a residual claimant to land not suited to agriculture. This ought to be just

as true for state parks and other types of possible land use. It may often happen that a submarginal farming area may make an ideal public park. But the point to be emphasized is that it would be more reasonable to locate state parks on the basis of the needs of the urban population than on the basis of the location of submarginal farming areas. Without information as to the demands which exist in the cities for rural land, one is hardly in a position to judge what advantages a rural section has for particular alternative purposes. The land-use specialists should be determining what specific knowledge they need, how cooperative agencies can help, and what methods may be used for pushing their researches back into the cities.

The above suggestions may be augmented to consider the factors which are behind demands of city people for rural land. If, as it has been stated, it is true that part-time farming is the final phase of a farm-to-city to part-time farming shift, and if we gain some insight to the city-to-part-time farm movement, there is good reason to try to understand the relationship of the farm-to-city and the city-to-part-time farm movements. While it is commonly recognized that our urban populations are maintained from the rural population, there is a surprising lack of knowledge in regard to the character of our city populations and the mechanics, so to speak, by which surplus rural populations move cityward. If we learn the needs of the city for recreational areas, we will next need to know what forces in the city motivate those requirements. Studies of this type will be essential if we hope to foresee changes in rural land use that changes in urban demands for land will bring about.

We need to know more about the effects which city demands have on rural land use and rural institutions. Specifically, we need to know under what conditions the part-time farming movement creates a higher relief load for rural towns, a larger rural town tax revenue, or a local retail market for farm products. A few facts and much speculation have been so far presented on this point. Does an influx of city people bring better social facilities to a rural town, or do the city people follow after the introduction of such services into the rural districts? Does the purchase of farm land for public parks cut the tax-base and reduce rural tax income, or does it eliminate road and school expenses, thus lightening the local governmental budget? Both sides of this question are still being offered as arguments for different schools of thought.

In making rural land-use studies in areas similar to the northeastern industrial region, sample areas should be carefully selected. In certain land utilization studies, we select areas of uniform soil or topographic features. In other cases, we choose the area within certain political boundaries, or we take areas of a homogeneous type of farming. It may be that in regions marked by scattered cities, the choice might be on the basis of the extent of the influences of a particular city. If this is the case, how do we designate areas of such influence for land-use research purposes? Even delineation of urban boundaries other than civil boundaries presents a problem which has wider ramifications than can be dealt with here. The student of industrial decentralization, for example, should be quick to recognize the importance of this particular aspect of the problem.

Directional Measures

We have noted the complexity of the land utilization pattern and some of the

unanswered questions relating to rural land-use planning. It should be obvious that either new types of controls may have to be devised or different emphasis be given to existing methods of directing land use in this area. Of course, there may be an important place for rural zoning and public purchase in an area like the northeastern industrial region. On the other hand, it is just as possible that other directional policies might be better fitted and at least as effective.

As our experiences with public purchase and rural zoning mature, we shall be in a better position to judge their possibly advantageous use. As we come to understand the present land-use pattern and the forces affecting it, we shall be better able to recommend aids for its economical development.

Some of the answers may simply point to a need for reconsidering present institutional arrangements. In Connecticut, for example, every town (township) is given a flat grant of $17,500 from the State annually for local road improvement, regardless of the size of the town, its location, road mileage, or land-use pattern. The effect of this one grant may have as much influence on rural land utilization as a number of other factors combined. Land-use planners may well afford to seek out other similar important factors and study their effects.

Attempting to state what kinds of forces are most effective and which forces are within the realm of public land-use policy is obviously precarious. However, such factors as road-building programs, credit extension, real estate license laws, and taxation policies may prove to be key points through which intelligent land use may be encouraged and uneconomic land use discouraged.

In an area where outside employment and retail marketing are sources of income to rural residents, road-building programs are of extreme importance. The following quotations are taken from the concensus of farmers' opinions as stated in various type-of-farming-area meetings in Connecticut and are indicative of the weight which must be attached to the road factor. In one area in Eastern Connecticut: "Since the road has been built, this has become a potentially excellent dairy area . . . Many farmers are increasing their dairy income by retailing milk. This area was going down hill until the new road was built there recently." In Central Connecticut: "The paved road has stimulated people to carry on agriculture in this area and has acted as an inducement to people to live here. Before the road, the area was almost deserted." In Western Connecticut: "A new road is being built . . . Summer residents will be attracted." These few random quotations represent the opinions of selected farmers for a few areas; similar examples could be given for many others.

It is fairly obvious that in an area with a "rurban" complex, hard-surfaced roads may well be considered an important directional measure in themselves. In such areas a high degree of correlation between land-use planning and highway planning is important. It is entirely possible that carefully designed highway programs may bring many areas which are now submarginal for any purpose into a high type of use.

A more thorough understanding of economic and social trends and institutional arrangements will have to precede recommendation of any important directional programs. Such enlightenment may uncover simple but effective measures which have a decisive bearing on rural land utilization. The possibility exists that the policies to be developed may have to be more complex than public purchase of farms for forests and

may even be more difficult than problems of rural zoning.

Importance of the Problem

Land-use planning should be conceived as aiming at the better social and economic utilization of all our land resources by the *total* population. It is becoming rather general to consider the importance of rural land-use planning on the basis of the existence of widespread destitute populations who are trying to engage in commercial farming on unsuitable land. There is good reason for the ascendancy of this attitude. A broader and more fundamental approach would require an attempt to understand rural land utilization in areas other than these recognized rural problem areas. Such a development would be important to the northeastern industrial area; what is more, it would help give us a better comprehension of the whole national land utilization problem.

As the types of needs outlined above are met, direct and immediate benefits will come to the northeastern industrial and similar areas. Such regions will have some basis for public policies which will meet problems of misuse of land and resulting social and economic maladjustments and inefficiencies. But the kinds of problems raised above are to be found in a large segment of our national life. Even were the geographical area in which they operate small, the proportion of our population which they affect is large. Considering the extent of the regions which are fairly similar to the northeastern industrial region, even the geographical spread is large. The whole manufacturing belt, which has recently been described by Dr. O. E. Baker as extending from New York to Baltimore, St. Louis, Duluth, and Quebec, represents, in varying degrees, the same types of land-use problems.

The best time to begin to tie in consideration of rural land problems in industrial regions is while the whole development of rural land-use planning is still in its early stages. We must be careful not to allow our thinking to become so set that an approach to the problems of these regions later becomes unnecessarily difficult.

Finally, the study of rural land use in these industrial regions will be important to the solution of land planning questions in other regions. All studies of those rural problem areas on which our attention has been centered eventually face the question of what to do about it. The resulting proposals have raised fundamental differences in questions of policy. Rural resettlement, industrial decentralization, subsistence homesteading, part-time farming, recreational developments, green-belt towns, public forests—on these and many other proposed solutions, we are by no means in general agreement. The answers to many of these points of difference are to be found in the study of rural land economics in industrial areas, "rurban land economics," it may be called. Possibly study of the experiences gained in the industrial Northeast and similar industrial regions will provide guide lines to policies of action in other areas.

Characteristics of the Commercial Lighting Load

By R. R. HERRMANN*

AMONG the various questions asked the writer from time to time regarding commercial lighting customers have been the following: (1) what is the load factor of a typical customer; (2) what is the diversity among customers; (3) how do the loads vary from month to month throughout the year; (4) do customers with large demands have correspondingly large usage; (5) is there any relation between load factor and diversity factor?

Characteristics of residential electric loads are fairly well known. Typical load curves of residential districts having light, medium, and heavy consumption have been published in the past. The average demands imposed by the several heavy-duty appliances used in the home on the local feeders and generating plants at various times of the day are capable of fairly accurate prediction.

Commercial lighting customers, however, are in a different category. The individual demands vary from almost nothing to relatively large amounts, with the load factor varying in the same manner. The small store in the outlying district of a large city or the storekeeper of the small town turns on his lights when it gets dark and turns them off when he closes his store for the day. True, he may leave a lamp lighted all night as an aid to police protection, and he may have a display window where the lights are on until midnight. These conditions lead one to believe that the diversity among commercial customers in any community will not be very great and that the load factor of any individual customer is largely determined by the kind of business in which he is engaged.

To obtain the characteristics of a group of such customers presents difficulties. Most commercial lighting districts are not supplied from feeders serving such districts alone. Energy is also used for purposes other than lighting. The modern commercial district has motors operating refrigerators, fans, oil pumps, and a host of other appliances for a multiplicity of purposes.

Several years ago a study of this problem was begun. Accordingly, the power system of the utility with which the writer is connected was studied to find suitable districts which might be used to obtain the desired information.

In addition to gathering statistics on present conditions, it was also felt desirable to conduct an experiment which would give a clue as to what changes, if any, in load characteristics would result if rates were lowered and usage increased. Through the cooperation of the Public Service Commission approval was obtained in February, 1935 to conduct an experiment (in a city of about 4,000 people in Wisconsin) which permitted the company to give additional kilowatt-hours over the amount used during the same month of the previous year at no charge to the customer. Later, this arrangement was changed so that a charge of 3c per kilowatt-hour for the additional use was made. Customers were asked to cooperate in the experiment, to refrain from burning lights unnecessarily, and to use the energy in

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the conduct of their businesses in a manner they felt would be to their best interests, just as if they were being charged for it at a fair price.

In judging the results of such a study one must remember that approximations and estimates are almost unavoidable. Investigations continuing as long as a year and of a nature such as this cannot be brought within the category of laboratory refinement. Some customers change their connected load. Others add new equipment. One business man may sell out to another who has different ideas regarding use of electricity. A customer may move to another location and another type of business take his place. Meters may fail to register at the time it is extremely desirable to obtain the reading. In other words, collecting data over a period of a year necessarily means encountering unforeseen events which may cause one to discard old data and begin anew or exercise one's judgment in estimates. In scrutinizing the data, therefore, the conditions mentioned above must be kept in mind and allowances made where necessary.

Districts in a number of communities were selected with reference to: (1) ease of segregating primary voltage feeders to permit measurement of demand and energy; (2) where the power load was only incidental and relatively small compared to lighting; (3) which contained as great a number of different businesses as possible.

Demand meters used were mainly of the indicating thermal type (Lincoln), although in some instances the ordinary maximum kilowatt (15-minute interval) indicating type were used. Previous tests showed that the kva. maximum demands of commercial lighting loads differed little from the maximum kilowatt demands as one might suspect, since the lighting load predominated. Kilowatt meters were used in feeder circuits. All kva. demands will be referred to herein as kw. demands, with the understanding that the kw. demand will probably be somewhat less.

Load and Diversity Factors

In Table I are shown individual monthly maximum demands, total monthly maximum demands (maximum demand of feeder supplying district as registered on the totalizing meter), kilowatt-hours used by customers, diversity factors, and load factors in a city of about 26,000 population, hereinafter referred to as City A. Because meter reading dates were not the same for all meters, monthly losses (difference between totalizing meter and sum of individual meters) appear erratic in a number of instances.

The total connected load of both lighting and other equipment was 83.2 kws. which gives a diversity factor of 1.76 between connected load and the feeder when the maximum demand of 47.2, which occurred in December, 1935, is used. In June it became almost 3. Diversity between individual demands and totalizing meter varies from 1.25 to 1.85.

In Table II are shown similar statistics obtained for a group of customers in a town of about 1,600 population, hereinafter referred to as City B. The maximum demand of this group occurred in November and the diversity factor of the connected load (61.3 kws.) was 2.5; however, the average load factor was less than in City A.

A third set of data was obtained in a city of about 21,000 population (City C) located in central Minnesota. It so happens that in one block of this city is what might be called a typical business section or rather a typical cross-section of commercial establishments in the community. In this block are lawyers',

dentists', and physicians' offices, a rather large department store, small specialty shops, drug store, taverns, filling stations, etc. Demand meters were installed on each customer's premises. The entire block was supplied from one transformer, and totalizing kilowatt-hour and demand meters were installed on the secondary feeder. Weekly readings of all meters were taken over a period of a year.

The results of this test are shown graphically on Chart I. It is interesting to note the increase in both demand and consumption during the three weeks preceding Christmas, the increase in weekly load factor during the autumn, and the small variation in diversity factor.

On Chart II are shown weekly load charts of four typical weeks, one each in spring, summer, autumn, and winter. The greatest demand occurred on Saturday in the evening. It is interesting to note how the gap between store-closing time and display lighting fills up in the

TABLE I. INDIVIDUAL DEMAND DATA IN A CITY OF 26,000 POPULATION (CITY A).

Customer	Monthly Demand in Kilowatts for Year 1935													Total Kilowatt-Hours	Per Cent Annual Load Factor
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Maximum		
Office	.80	.80	.80	.70	.80	.70	.80	.80	.80	.50	.40	.50	.80	136	1.9%
Hall lights	.75	.41	.50	.70	.50	.70	.65	.30	.50	.70	.35	.55	.75	292	4.4
Women's apparel	4.00	2.90	3.40	4.00	4.00	3.60	3.80	3.00	4.00	4.20	4.20	3.50	4.20	3,709	10.0
Men's clothing	2.10	2.10	2.10	2.10	2.10	2.20	2.10	2.20	2.10	2.40	2.00	2.50	2.50	3,354	15.2
Shoe repair—Lighting	.50	.50	.40	.40	.40	.50	.50	.50	.50	1.00	.40	.40	1.00	331	3.8
Power	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.80	1.80	1,446	9.1
Shoe repair—Lighting	.30	.30	.20	.60	.50	.50	.60	.40	.50	.45	.55	.65	.65	232	4.1
Power	.56	.56	.56	.56	.56	.56	.56	.56	.56	.56	.56	1.50	1.50	561	4.2
Barber shop	1.20	.90	1.10	1.00	1.30	.90	1.00	1.05	1.50	1.20	1.10	1.95	1.95	812	4.7
Department store	12.50	10.10	10.00	11.00	11.00	11.50	11.50	10.40	12.50	12.50	11.50	12.50	12.50	25,209	22.9
Confectionery—Lighting	2.10	1.20	2.00	2.10	2.00	†3.00	4.20	3.30	4.20	2.10	2.20	1.50	4.20	5,761	15.6
Power	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.00	1.36	1,570	13.1
Corset shop	1.40	1.20	1.50	1.10	1.20	1.20	out							327	
Clothes shop							2.10	2.10	out				2.40	496	9.2
Office									2.40	2.40	†2.40	2.40		1,113	
Filling station	5.60	5.80	5.60	4.80	4.80	4.20	4.20	4.90	5.10	5.20	5.60	5.80	5.80	7,192	14.1
Wholesale fruit	.30	.30	.20	.20	.20	.20	.20	.20	.20	.10	.10	.10	.30	79	3.0
Tavern	1.30	1.10	1.60	.85	.85	.85	3.60	3.70	3.60	3.70	3.70	.32	3.70	2,431	7.5
Tavern	3.10	3.00	2.50	3.00	2.70	2.60	3.10	3.20	3.10	3.30	3.40	3.50	3.50	7,976	25.9
Dry cleaner	1.10	.90	.90	1.05	.70	.70	3.70	3.70	3.70	3.70	3.70	.50	3.70	321	1.0
Lawyer's office	.20	.25	.20	.21	.20	.20	.30	.20	.25	.20	.25	.30	.30	198	7.5
Beauty parlor—Lighting	.75	.75	.70	.80	.70	.80	.60	.55	.55	.80	.70	.80	.80	651	9.2
Heating and Cooking	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60	6.50	6.50	5,984	10.5
Dentist's office	.70	.45	.50	.65	.70	.60	.50	.47	.52	.60	.51	.65	.70	155	2.5
Hall lights	.75	.75	.80	.75	.80	.60	.60	.65	.75	.80	.75	.80	.80	973	13.8
Fur store	2.40	2.00	2.00	2.00	†2.00	out							2.40	1,247	11.3
Liquor store							2.00	1.90	2.20	2.15	2.00	2.10		1,120	
Hall lights	.20	.40	.30	.20	.20	.20	.20	.20	.20	.25	.25	.35	.35	253	8.2
Confectionery—Lighting†	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	5,272	29.9
Power	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	1.00	3.18	6,625	23.7
Garage	.60	.60	.60	.60	.70	.60	1.10	.70	.70	.70	.65	.75	1.10	857	8.8
Dance studio	1.80	1.00	1.00	1.10	1.20	1.30	1.10	1.30	1.35	1.65	1.60	1.70	1.80	511	3.2
Office	.30	.40	.80	.80	.40	.40	.40	.20	.50	.30	.40	.50	.80	85	1.2
Shoe shining												.80	.80	20	3.4
Total Kws.—Lighting	46.75	43.80	41.70	42.71	41.95	40.05	50.85	47.92	53.72	52.90	50.71	47.42	59.80		
Power & Misc.	12.20	12.20	12.20	12.20	12.20	12.20	12.20	12.20	12.20	12.20	12.20	11.80	14.34		
Total	58.95	56.00	53.90	54.91	54.15	52.25	63.05	60.12	65.92	65.10	62.91	59.22	74.14		
Kilowatt-Hours—Lighting	6,742	5,492	4,665	5,566	5,086	4,944	5,199	5,896	6,156	6,309	7,209	7,849		71,113	
Power & Misc.	1,010	1,006	773	1,490	1,613	1,696	1,499	1,901	1,544	1,303	1,208	1,143		16,186	
Total	7,752	6,498	5,438	7,056	6,699	6,640	6,698	7,797	7,700	7,612	8,417	8,992		87,299	
Totalizing Meter—Kwa.	40.0	32.0	32.0	35.0	36.6	31.6	34.0	36.0	36.4	39.4	40.0	47.2	47.2		
Kwhs.	8,200	6,880	5,640	7,420	6,960	6,980	6,980	8,420	8,060	8,100	9,080	9,500		92,220	
No. of Days	32	31	28	31	31	30	30	31	32	29	31	31		367	
Diversity Factor	1.47	1.75	1.68	1.57	1.48	1.65	1.85	1.67	1.81	1.65	1.57	1.25	1.57		
Load Factor—%	26.7	28.9	26.2	28.5	25.6	30.7	28.5	31.4	28.8	29.5	30.5	27.1			22.2%

* Power and heating and cooking demands estimated at ½ of the connected load until measured in December.
† Estimated demand.

TABLE II. INDIVIDUAL DEMAND DATA IN A CITY OF 1,600 POPULATION (CITY B).*

Customer	Monthly Demand in Kilowatts for Year 1935													Total Kilowatt-Hours	Per Cent Annual Load Factor
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Maximum		
Chiropractor	.80	.65	1.10	out									1.10	89	3.7%
Residence†					.50	.50	.50	.50	out					102	
Residence†									.50	.50	.50	.50		139	
Dry goods	.70	.70	.70	.90	.90	.80	out						.90	173	4.4
Grocery—Lighting	.80	.81	.90	.90	.85	.90	1.40	1.40	1.40	1.40	1.40	2.00	2.00	779	4.5
Power	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.37	.37	1,081	33.5
Grocery—Lighting	1.40	1.30	1.00	1.30	1.10	1.00	1.10	1.10	1.10	1.20	1.10	1.30	1.40	1,897	15.6
Power				1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.49	1.49	3,010	31.1
Post office	1.00	.70	.70	.80	.50	.50	.50	.80	.45	.75	.90	1.00	1.00	877	10.1
Filling station	1.40	1.30	1.10	1.30	1.70	1.50	1.50	1.70	1.50	1.60	1.70	1.30	1.70	1,076	7.3
Filling station	1.50	1.60	1.30	1.60	1.60	1.80	1.80	1.70	1.70	1.90	2.20	2.20	2.20	1,855	9.7
Garage—Lighting	.80	.90	.70	.60	.70	.80	.80	.70	.80	.80	.80	.80	.90	399	5.1
Power	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	3.15	3.15	2,840	10.3
Hotel	3.60	3.00	2.20	2.10	2.00	2.20	2.20	2.10	2.20	2.00	2.30	1.90	3.60	3,244	10.3
Drug store—Lighting	1.50	1.20	1.10	1.10	1.40	1.40	1.40	1.30	1.30	1.30	1.30	1.30	1.50	1,389	10.6
Power	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	1.12	.44	1.12	1,142	11.7
Opera house	1.20	1.90	.90	.00	1.10	1.00	.00	.20	.30	.40	.80	.30	1.90	61	.4
Church	1.80	2.50	1.70	2.30	1.40	1.60	1.40	1.40	1.50	2.50	2.20	2.20	2.50	186	.9
Residence†	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	2,280	7.5
Dance hall—Lighting†	10.50	10.50	10.50	10.50	9.00	9.00	9.00	9.00	9.00	9.00	8.90	10.00	10.50	10,832	11.8
Power					1.50	1.50	1.50	1.50	1.50	2.50	6.50	1.50	6.50	3,746	9.9
City hall†	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00	3.00	971	3.7
Electric range†—H. & C					3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.18	85	.5
Office†										.12	.12	.12	.12	11	4.2
Dentist†										.30	.30	1.10	1.10	10	.4
Hall†										2.00	2.00	1.60	2.00	60	1.4
Residence†										.50	.50	.50	.50	151	14.0
Residence†										.20	.20	.20	.20	47	10.9
Total Kws.—Lighting	32.50	32.56	29.40	28.90	28.25	28.50	27.10	27.40	27.25	31.97	32.72	34.82	44.80		
Power	4.00	4.00	4.00	5.31	9.99	9.99	9.99	9.99	9.99	10.99	14.99	10.13	12.63		
Total	36.50	36.56	33.40	34.21	38.24	38.49	37.09	37.39	37.24	42.96	47.71	44.95	57.43		
Kilowatt-Hours: Lighting	2,530	3,074	2,901	2,623	2,027	1,575	1,367	1,432	1,632	2,220	2,509	2,738		26,628	
Power	521	349	400	778	1,102	1,143	1,520	1,609	1,151	1,129	1,033	1,169		11,904	
Total	3,051	3,423	3,301	3,401	3,129	2,718	2,887	3,041	2,783	3,349	3,542	3,907		38,532	
Totalizing Meter—Kws.	15.5	20.0	19.2	20.7	23.0	22.0	20.2	22.0	21.5	21.8	24.7	21.0	24.7		
Kwhs.	3,110	3,600	3,170	3,450	2,830	2,850	2,960	3,130	2,880	3,400	3,760	4,210		39,350	
No. of Days	31	31	30	29	30	32	30	31	29	29	31	30		363	
Diversity Factor	2.35	1.83	1.74	1.65	1.66	1.75	1.84	1.70	1.73	1.97	1.93	2.14	2.33		
Load Factor—%	27.0	24.2	22.9	23.9	17.1	16.9	20.4	19.1	19.2	22.4	20.5	27.8			18.3%

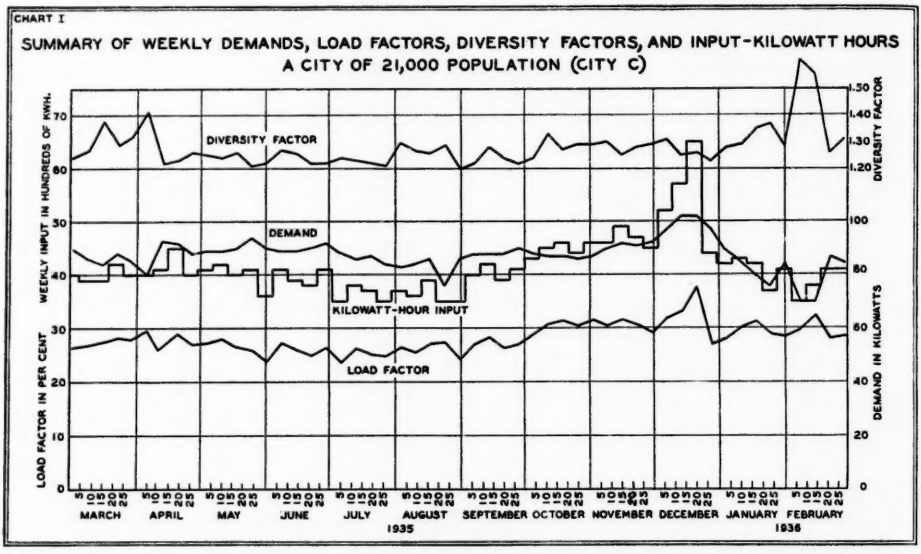
* Power and heating and cooking demands estimated at ½ of the connected load until measured in December.
† Estimated demand.

autumn. The department store accounts for about 25% of the total coincident demand.

In addition to obtaining data on customers located in the three towns above, similar data were gathered in other communities in North and South Dakota and in Wisconsin. The annual demands, kilowatt-hour usage, and load factor of these customers are shown in Table III. These customers are not a cross section of all commercial customers, however, but merely a selected group. The data show a great variation in demands, usage, and load factor among customers engaged in the same commercial activity.

Relation between Individual Load Factor and Feeder Diversity Factor

With 100% load factor use by each customer, the diversity factor will be unity. Where the time during which energy is used is less than 24 hours each day and more than 12, and full use occurs during the hours of use, the diversity factor will again be unity. In the case of commercial lighting customers the use is less than 12 hours per day, but the lighting load is turned on when it becomes dark, so that little diversity will occur. However, there are usually some offices which close early or some commercial establishments



where the maximum amount of lighting required does not occur until after sundown so that some diversity among all classes will occur. These suppositions are borne out by the data obtained. Generally speaking, then, one might expect greater diversity with smaller individual load factors.

The same cannot be said of group load factors. Increase in individual load factor may result in a decrease of the group or feeder load factor and vice versa. The diversity is largely determined by the reasons for use of the particular service. Lighting comes into general use because it gets dark and therefore the time of occurrence is about the same over a considerable area. Cities located on the western edge of a time zone should, by this reasoning, have an advantage over cities located along the eastern edge, because of the overlapping of power and lighting loads in the case of the latter. Equipment used for other purposes, such as refrigeration, is dependent upon other factors, and one might suspect that the greatest diversity would occur with such equipment. Diversity among large districts located north and south along the same meridian and having a multiplicity of customers will be small. On the other hand, the diversity among districts located east and west along the same parallel may be considerable. As the day load becomes greater in proportion to the lighting, the diversity should again become less between such large systems.

On Chart III is shown the distribution of customers according to maximum demands and annual consumption. The correlation coefficient of these 150 cases is .824 which shows close correlation. The first portion of the curve is parabolic, the actual parabola being obtained by the method of least squares, using the data from 0 to 6,000 kwhs. annual consumption. The remainder is a straight line determined in the same manner by using data above 6,000 kwhs. per annum. The slope of the line shows that the average annual load factor for usage in excess of 6,000 kwhs.

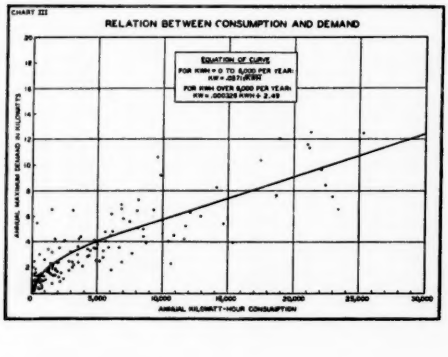
CHART II

TYPICAL WEEKLY LOAD CHARTS FOR CITY C

TABLE III. SUMMARY OF MEDIAN, MAXIMUM AND MINIMUM KILOWATT-HOURS, DEMANDS AND LOAD FACTORS OF VARIOUS CLASSIFICATIONS OF COMMERCIAL LIGHTING CUSTOMERS
(153 Metered Customers in 6 Different Communities)

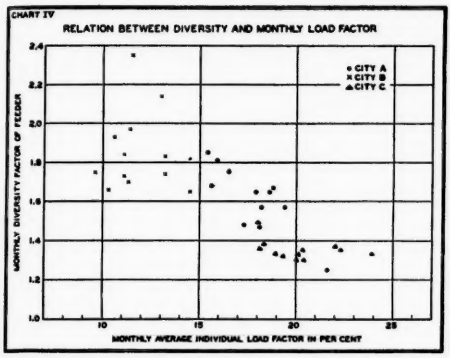
Classification	Annual Kilowatt-Hours	Annual Maximum Demand	Annual Load Factor
14 Groceries and Meat Markets			
Median	3,361	2.40	14.90%
Maximum	10,893	4.80	29.78
Minimum	574	.90	7.28
8 Filling Stations			
Median	2,386	2.75	11.03
Maximum	9,840	9.20	13.79
Minimum	1,116	1.70	7.25
6 Drug Stores			
Median	14,324	6.10	27.23
Maximum	23,469	9.60	32.59
Minimum	1,438	1.50	10.94
7 Cafes			
Median	10,638	3.90	31.66
Maximum	23,010	7.50	52.80
Minimum	1,538	.80	21.95
8 Taverns			
Median	2,123	1.44	16.96
Maximum	7,644	3.30	38.48
Minimum	722	.45	10.73
3 Confectioners			
Median	5,426	4.25	22.12
Maximum	14,672	5.40	31.02
Minimum	3,610	2.80	9.70
5 Variety Stores			
Median	21,093	11.50	19.46
Maximum	38,355	22.50	23.32
Minimum	1,506	3.20	5.37
4 Beauty Parlors			
Median	1,223	2.25	5.75
Maximum	2,066	4.20	7.89
Minimum	180	.45	4.57
2 Tailor Shops			
Median	116	.48	2.68
Maximum	156	.55	3.24
Minimum	76	.41	2.12
5 Garages			
Median	1,222	1.80	7.75
Maximum	14,137	8.20	24.60
Minimum	409	.90	5.19
4 Hardware Stores			
Median	8,383	5.15	16.18
Maximum	18,939	12.00	25.53
Minimum	2,862	2.45	13.34
7 Doctors and Dentists			
Median	512	1.30	4.16%
Maximum	1,763	2.60	10.59
Minimum	86	.70	.98
4 Dep't Stores			
Median	21,254	11.90	21.68
Maximum	74,430	33.12	25.65
Minimum	12,107	6.30	19.46
8 Clothiers			
Median	5,790	4.13	14.64
Maximum	8,160	7.30	18.94
Minimum	445	1.10	4.62
5 Shoe Stores			
Median	6,013	4.50	15.62
Maximum	8,512	5.10	19.43
Minimum	4,264	3.40	14.32
5 Women's Apparel			
Median	4,990	4.40	15.10
Maximum	51,180	31.20	25.53
Minimum	1,453	1.50	9.66
3 Jewelry Stores			
Median	4,744	3.52	13.21
Maximum	6,650	4.10	21.57
Minimum	686	.89	8.80
4 Bakeries			
Median	2,754	2.42	17.30
Maximum	4,232	3.40	25.07
Minimum	1,249	1.10	4.19
8 Barber Shops			
Median	513	1.17	5.80
Maximum	1,560	2.10	9.89
Minimum	182	.21	1.95
8 Offices			
Median	183	.43	3.34
Maximum	486	1.40	12.33
Minimum	20	.15	.50
6 Halls			
Median	411	2.45	2.60
Maximum	3,162	6.60	5.55
Minimum	202	.73	1.54
2 Hotels			
Median	12,989	6.00	20.82
Maximum	22,476	8.40	30.54
Minimum	3,502	3.60	11.10
27 Miscellaneous			
Median	698	1.50	7.01
Maximum	9,622	10.60	23.68
Minimum	55	.30	.65

per year is 35.1%. That is, with increasing consumption, the average annual individual load factor approaches 35.1%. It should not be forgotten that these customers are located in towns, none of which is larger than about 25,000 people. Therefore these data may differ considerably from those in larger cities.



With lighting only, it must be admitted the diversity of use is not great. As other loads come into use, such as refrigerators, fans, etc., one would expect the load factor of individual customers to increase. As the individual load factor becomes greater, however, the chance of any customer's load contributing to the peak becomes greater. If each customer operated at 100% load factor, the diversity factor would be unity. Since business hours are 8 per day or

more, for 6 days per week, it appears that if the average load factor is 48/168, or 28.6%, the diversity factor should be close to unity. On Chart IV are



plotted as ordinates the diversity factors (sum of individual maximum demands divided by maximum demand of feeder) and as abscissae what may be called average load factors (feeder input kilowatt-hours divided by the sum of individual maximum demands). The trend indicates a reduction in diversity factor as the average load factor increases, and points to no diversity at about 7 to 8 hours per working day.

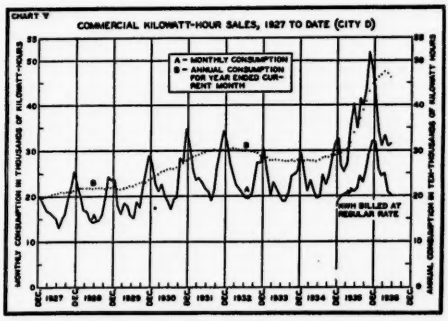
TABLE IV. SUMMARY OF KILOWATT-HOUR SALES BILLED AT REGULAR COMMERCIAL RATE AND ADDITIONAL ENERGY SUPPLIED FREE AND AT 3.0C PER KWH. (CITY D)

Month	Billed at Regular Rate	Free Kwhs.	Total Kwhs.
1935			
May	21,706	14,401	36,107
June	20,941	19,249	40,190
July	21,713	13,117	34,830
August	24,384	17,177	41,561
September	22,939	17,289	40,228
October	25,542	18,185	43,727
November	29,451	22,306 Kwhs. at 3.0c	51,757
December	32,149	16,134	48,283
1936			
January	31,835	9,430	41,265
February	25,884	7,904	33,788
March	24,456	6,687	31,143
April	25,077	8,272	33,349
May	20,828	10,225	31,053
June	20,153	11,334	31,487

In the case of City D free "additional" energy was given for 7 months only, beginning on April 20, 1935, and after that the additional energy was charged for at the rate of 3c per kilowatt-hour (Table IV). Demand and watt-hour meters were installed in 4 feeders serving the downtown or commercial section. By rearrangement of some circuits and the installation of an additional transformer, a large number of the residences served originally from the 4 circuits were eliminated. After the rearrangement, the following customers were served from these 4 feeders:

Circuit	Commercial	Residential	Power	Water Heating	Cooking
1	44	13	5	1	3
2	45	24	14	2	.....
3	32	17	3	1	.....
4	31	21	7	.....	1
	152	75	29	4	4

Intensive effort was put forth immediately to get customers to install more lighting. The results are shown in Table V. Chart V shows the kilowatt-hours used by months since January 1, 1927.



In Table V are shown the monthly coincident maximum demands of the 4 feeders, kilowatt-hours supplied to the feeders, kilowatt-hours sold to the several classes of customers, and the

monthly load factor for one year beginning March 20. It is of interest to note the marked increase in demand with the beginning of the free electricity plan on April 20.

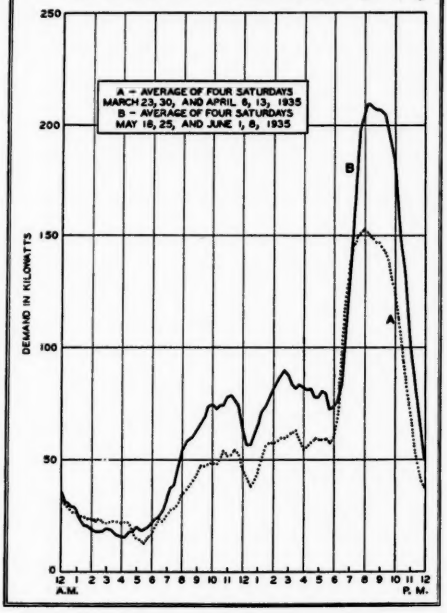
The weekly maximum demands (not given in the table) show a marked decrease after the end of the free-use period on November 20. Immediately preceding Christmas the demand rose to its former level but dropped promptly thereafter.

On Chart VI are shown the load curves obtained by averaging the combined demands of the 4 circuits at each ¼-hour interval for four Saturdays preceding the use of free energy and four Saturdays following. There is a shift in time of the load curve in the evening of about 15 minutes caused, no doubt, by the lengthened period of sunlight. The load before 6 P.M. increased also, indicating that more light was used during the daytime, probably for display purposes. The ratio of average to maximum demand (daily load factor) of Curve A is 37.8% and of Curve B is 36.1%.

Chart VII shows the load curve of the 4 circuits and of the entire community.

CHART VI

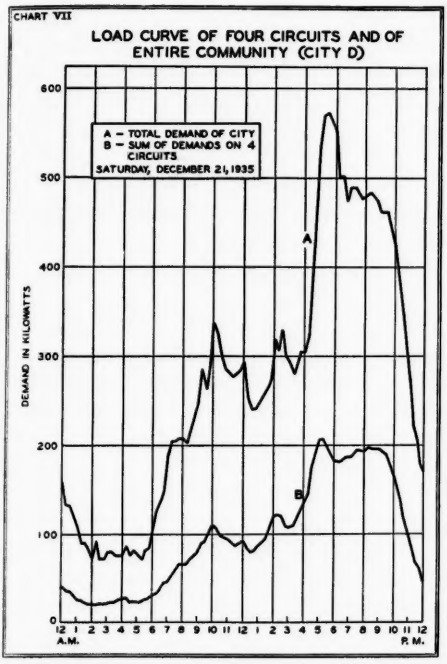
SUM OF DEMAND ON FOUR CIRCUITS (CITY D)



The curves show that there is very little diversity between the load supplied by the 4 circuits and that of the entire city. At 5:30 P.M., when the maximum demand of the entire city occurred, the

TABLE V. DATA ON FOUR METERED CIRCUITS FOR

	March 20 to April 20	April 20 to May 20	May 20 to June 20	June 20 to July 20	July 20 to August 2
Maximum Demand—Kws.	160.2	210.2	215.6	209.2	215.4
Kilowatt-hour Input	35,160	42,020	45,600	42,560	48,180
Per Cent Load Factor	29.5%	27.8%	28.4%	28.3%	30.1%
Kilowatt-hour Sales	*31,925*	*39,234*	*43,144*	*40,113*	*46,523*
Commercial lighting	18,234	25,727	28,006	25,366	30,104
Residential	3,219	3,360	3,806	3,340	3,275
Power	5,206	5,624	7,185	7,338	8,798
Commercial cooking	873	905	842	776	827
Commercial water heating	324	569	707	581	580
Street lighting	4,069	3,049	2,598	2,712	2,939
Christmas lighting					
Kilowatt-hour Loss	3,235	2,786	2,456	2,447	1,657
Per Cent Loss	9.2%	6.6%	5.4%	5.7%	3.4%



demand of the commercial district measured was within a few kilowatts of its maximum. Even on a monthly basis the demand of these 4 feeders at the time of the city maximum was but little different from its maximum. This is shown by the data in Table VI.

TABLE VI. PEAK RESPONSIBILITY OF COMMERCIAL LOAD

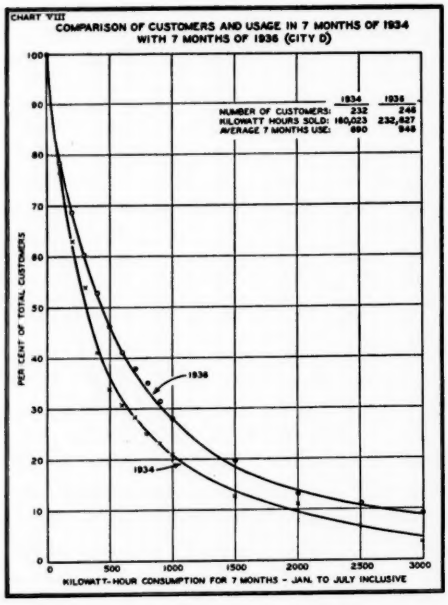
City Monthly Maximum Demand		Monthly Max. Demand of 4 Feeders		Demand of 4 Feeders at Time of City Maximum	Ratio
Date	Kws.	Date	Kws.	Kws.	
Mar. 30	407.2	Mar. 30	150.8	148.8	.988
Apr. 27	486.4	Apr. 27	192.4	191.2	.994
May 25	520.6	May 25	215.6	211.6	.981
June 1	514.1	June 15	213.2	207.0	.971
July 20	579.2	July 27	209.6	191.8	.915
Aug. 3	646.6	Aug. 31	215.8	201.2	.932
Sept. 21	589.0	Sept. 28	214.8	200.6	.934
Oct. 26	552.6	Oct. 5	212.6	182.8	.860
Nov. 2	571.0	Nov. 2	205.8	191.6	.931
Dec. 28	576.0	Dec. 21	207.0	177.6	.858
Jan. 4	558.4	Jan. 11	175.8	163.6	.931
Feb. 1	522.4	Feb. 1	169.0	169.0	1.000
Mar. 7	542.2	Mar. 14	161.0	153.0	.950

Chart VIII shows a comparison of the distribution of customers with usage during the first seven months of 1934 with the first seven months of 1936, when additional energy over the amount used during the same month of 1934 was

YEAR ENDED MARCH 20, 1936 (CITY D).

July 20 to August 20	August 20 to September 20	September 20 to October 20	October 20 to November 20	November 20 to December 20	December 20 to January 20	January 20 to February 20	February 20 to March 20
215.4	215.8	214.8	208.8	201.0	207.0	169.0	161.0
48,180	49,900	49,340	58,170	52,800	49,860	41,330	39,670
30.1%	31.1%	31.9%	37.4%	36.5%	32.4%	32.9%	35.4%
46,523	*47,728*	*47,309*	*54,374*	*50,123*	*47,108*	*39,565*	*36,758*
30,104	30,756	30,547	36,798	33,085	28,865	23,675	21,156
3,275	4,092	4,202	4,911	4,827	5,554	5,747	5,155
8,798	8,134	7,304	7,123	6,254	5,823	5,379	5,417
827	877	812	885	869	970	771	817
580	559	613	659	707	763	449	734
2,939	3,330	3,831	3,998	4,381	4,268	3,544	3,479
					865		
1,657	2,172	2,031	3,796	2,677	2,752	1,765	2,912
3.4%	4.3%	4.1%	6.5%	5.1%	5.5%	4.3%	7.3%

charged for at 3c per kilowatt-hour. In 1934, 25% of the customers used over 900 kwhs. during the first seven months whereas in 1936 they used over 1,200. The median use in 1934 was 300, compared with 440 in 1936. During these same periods the average use was 690 and 946 kwhs., respectively.



In order to check the values expressing the relationship between average maximum demand and annual use previously determined, similar figures were obtained in the case of City D. In this city the equation is

$$KW = .0687\sqrt{Kwh}$$

which is not greatly different from that previously determined.

Conclusions

This study suggests the following conclusions with respect to commercial lighting customers in cities of 25,000 population or less: (1) the average customer has an annual load factor of less than 20%; (2) the smallest monthly kilowatt-hour consumption during the summer months is approximately 70% of the largest monthly consumption during the winter months; (3) generally speaking, the customer with a large demand has a correspondingly high usage, the load factor approaching about 35% as the usage increases; (4) an improvement of individual load factor tends to reduce the diversity among customers having about the same percentage of power and lighting load; (5) any decided lowering of the rate along with intensive sales activities will increase usage, with an accompanying increase in demand.

II. Power Pioneering: A Case Record

By SHAW LIVERMORE*

SOME details from the early history of the Great Northern Power Company[1] illustrate strikingly the character of early electric power development in the United States. This was a power project built near Duluth in 1905–8, before large-scale development of electrical generating capacity had begun. It ultimately was merged with the Minnesota Power & Light Company, the latter a subsidiary of American Power and Light Company. During its investigation of the Electric Bond and Share group of companies, the Federal Trade Commission gathered evidence concerning this project, but most of its material related to the period after the formation of Minnesota Power & Light Company (1923). Only the pioneer period of the Great Northern Company itself will be dealt with here. The reader may complete the story by reference to official records of the Trade Commission's inquiry into the electric utility industry.[2]

The Company must be sharply distinguished in conception and purpose from the mass of concerns that had been established after 1885 to serve fairly large cities or towns. This group, until about 1900, was almost completely concerned with electric lighting; in a few cases supply of power for traction lines was also important. Until 1895 the movement was confined to the larger cities, but after the Chicago World's Fair growth became more rapid, and small individual plants for lighting purposes sprang up over the country. Except for Niagara, early projects gave little or no attention to what in after years became the "industrial load"; even in cities power consumption was mainly in the category of commercial uses.

In contrast, this Company at no time in its early career participated in retail distribution to small customers; after 1910 it did expand on the Mesaba Range in such a way as to involve small-scale distribution, but the power load in that area was its chief interest at all times. It was promoted solely as a large-scale producer of power. Part of the power sale was to be to the Duluth Edison Electric Company, which in turn was one of the familiar type of lighting companies, but the Company must nevertheless be regarded as essentially a power project. It is one of the few examples of this type before 1910. Since the Duluth Edison concern stood between it and the household consumer, there was no cushion of monopolistic lighting sales, with rates at what the traffic would bear, to help smooth its early path. Thus the Company's history throws into relief the process and the difficulties of developing a power load, of introducing electric current into industry, which has had such far-reaching effects. Success was not easily achieved. Projects after 1920, private or public, seem like child's play in com-

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[1] Correspondence of various individuals interested in the promotion of the Company, made available to the author, has been the chief source material. Newspapers in Duluth and various published reports of the companies concerned have also been helpful.

[2] In the series of reports made to the Senate, as Doc. 92, 70th Cong., 1st sess., on *Utility Corporations*, the Great Northern Power Company is discussed in Parts 23–24 at 234–50 (hearings) and 869–82 (exhibits); in Part 26 at 418 through 629 (exhibits); and in Part 35 at 341, an engineering report by J. C. Dickerman in which a number of errors occur.

parison, in so far as managerial ingenuity, leadership, and the availability of competent engineering assistance are concerned.

Early History

An element of the dramatic was present in the origin of the development. The plant was ultimately located on the St. Louis River at Thomson, a small settlement about 15 miles from Duluth, on land originally purchased by Jay Cooke in 1869. The City of Duluth owed its existence in the first instance to the enthusiasm of Jay Cooke, builder of the Northern Pacific Railroad. It remained his favorite city in the Northwest, and he protested vigorously when the general offices of the Railroad were placed in Minneapolis after control had passed from his hands. The failure of his firm in 1873 had cost him that control, and his land holdings as well, but he lived on until 1905 to see the road complete and in the heyday of success. Similarly, he lived for a few months after the final contracts for development of his water-power sites on the St. Louis River had been signed.

The liquidation of the Cooke firm dragged along for many years, but Jay Cooke's own fortune was in some measure recouped by a lucky investment of a few thousand dollars in 1878 in a Nevada silver mine, which yielded profits of several hundred per cent. With this capital he repurchased, in 1885, land along the river outside Duluth which he had previously owned.[3] He had originally selected these lands as possessing great potential value for water-power sites, and had, by 1900, organized several manufacturing companies which held title to the river lands and water-power sites. Duluth as a city, however, had failed to justify Cooke's forecast for it as a great entrepôt. Not until the discovery of huge iron ore deposits in the early '90s did it come into the prominence that Cooke had always predicted for it.

Among the newcomers attracted by the boom were two engineers, C. C. Cokefair and his son. They came to Duluth about 1895, and devoted their efforts to small-scale consulting and designing work, particularly for the coal and iron docks. After 1898 they became actively interested in the possible development of water power in the region, and by 1901 had interested Alexander McDougall, picturesque local leader of shipping interests. Their own company, organized in August, 1899, was the Northwestern Power & Transportation Company and it remained as their promoting vehicle. A second concern, designed to be an operating company, was the Highland Canal & Power Company, organized in January, 1900.[4] The High-

[3] Oberholtzer, in his *Jay Cooke, Financier of the Civil War*, says: "That his confidence in this region underwent no abatement in the interval, while the world reviled and doubted him, is shown by the fact that he reinvested in land near Duluth. He obtained control of the water power of the St. Louis River at Dallas where he had long before predicted the establishment of a great manufacturing center, a very valuable property which was sold by J. Horace Harding to a company of capitalists just a few months before his death. This event brought him great satisfaction." (p. 530.)

"When Mr. Harding went to him in 1904 and told him that the plans for harnessing the power of the St. Louis River were complete his eyes filled with tears." (p. 545.)

[4] Other projects had been formed as early as 1894, but all were unable to make progress without possession of the Cooke lands and riparian rights on the most strategic section of the St. Louis River. This stream curves around the southwestern end of the ridge of rock which forms the northern shore of the Lake and upon which Duluth is situated. Back of these heights flows the Cloquet River in a southwesterly direction, joining the St. Louis about 30 miles west of the City, and about the same distance above the site of the ultimate power development. The Altamonte Water Company applied in 1894 for a permit to erect dams on this river and did secure permission. At certain points the Cloquet is not much farther distant from the city than the St. Louis. A similar concern, also organized in 1894, was the Minnesota Canal & Power

(*Footnote 4 continued on page 51*)

land Company aimed to develop a second source of power that had always been discussed—the drop of over 400 feet from the heights above the City (within the city limits) to the harbor on Lake Superior. Such a development would have been similar to the Schoellkopf property at Niagara, which was then being used only for hydraulic power. Not until 1904 were electric generators installed on the Schoellkopf site.

In April, 1902 the Highland Company obtained a franchise[5] from the City of Duluth based upon this plan. Diversion of the Cloquet or other streams north of the City was a necessary part of the plan, and opposition of lumber interests was certain. The franchise by its terms indicates that at that date the promoters had the development of power primarily in mind; part of Section 8 reads as follows:

"It is further expressly understood and agreed that the said Company . . . shall always have available at least three times as much power for power purposes in the City of Duluth as is furnished for lighting purposes."

That this franchise was obtained primarily for strategic purposes seems evident from events that followed. Two months later, June 27, 1902, the Highland Company applied to the Secretary of War for approval of plans for a dam to be erected across the Cloquet River, a tributary of the St. Louis. The franchise had been so worded that the Duluth Heights location need not be the source of power; the right to distribute current in the City would be valid if another source were used. But the Highland Company probably could not have secured it without possessing actual lands in the City on the heights as a tangible earnest of its intentions. Since the Highland Company had the franchise as a bargaining weapon, it welcomed the storm of protests that poured in on the Chief Engineer of the War Department, led by the Cooke companies and the Weyerhaeuser lumber interests. The Chief of Army Engineers during the summer of 1902 stated that he could see no objection to granting the permit, despite the request for hearings. But in November, 1902 the Assistant Secretary of War wrote to Capt. McDougall that "issuance of a permit is deferred until further information in respect thereto has been obtained." Immediately afterward McDougall replied that "his company might shortly ask the consent of the War Department to construct a dam at a point near Thomson upon the St. Louis River" and requested that the Cloquet application be held in abeyance.

This was obviously the result of success in negotiating with J. Horace Harding, who was the "Cooke interests" at that time. He had been for many years one of the liquidators of the old Cooke firm, and was a brother-in-law of C. D. Barney, who had taken over the Cooke firm and reorganized it in

(Footnote 4 continued from page 50)

Company. It gave the backers of the Great Northern Company some worry in 1904, and the owner of its permit and property was bought out.

[5] This franchise bore many of the earmarks of the inept competitive franchises granted by many cities in this period; they had especially attracted attention and brought bad results in the gas industry. Some clauses are of interest. The City was to be given current at 25% lower prices than "to any other consumer for a similar quantity of power under like circumstances." The City was to have the right to purchase the plant under an elaborate procedure, but only that part devoted to lighting purposes. Finally, no work of stringing poles or wires was to be done until the generating plant was complete—this to prevent a mere competitive threat. But the franchise obviously was drawn to permit lighting competition with the existing Duluth Edison concern, at least to a limited extent. The latter would obviously be interested in any method by which it could head off competition in its profitable lighting business; it was much less interested, as were all city companies of the period, in the power load.

Philadelphia and New York as C. D. Barney & Co. (its present name). The Cooke lands offered the best power site; the Highland Company had an advantageous franchise giving access to Duluth. A bargain was easily struck. A contract dated September 29, 1902 provided for sale by the Cooke landowning company to the Highland Company of riparian rights in a fairly long stretch of the river and of 250 acres of land, for a cash payment of $500,000 to be paid on or before July 1, 1903. The St. Louis River Slate Brick Company (the nucleus of Cooke's dream of a great manufacturing center on the river and a third party to the contract) was to have perpetually reserved for it, free of charge, the equivalent of 1,000 h.p. Rights-of-way for wiring were also granted over lands not included in the sale.

The local group in Duluth who were to remain interested in the project for the next 20 years became quite well defined with the organization of the new operating company, Great Northern Power Company, early in 1903. It was to acquire franchises and property from the Highland Company which thereafter was inactive. Its capital stock of $100,000 was owned entirely by the original holding company of 1899, Northwestern Power & Transportation Company. Charles A. Duncan became president; he was a leader in the wholesale lumber trade of the region. The remainder of the group could be found in counterpart in most cities of 50,000 to 300,000 population of the period.

In 1902–3 the Duluth Edison Company was having difficulty in financing its expansion, so that it was glad to contract for an additional power source for future years. A bargaining position between the two companies was thus created. The result was a contract early in 1903 under which the lighting concern agreed not to sell current for power uses, and the power company agreed not to distribute current for lighting. The rates to be charged by the lighting company in cases where the consumer used a mixture of light and power were carefully specified. Similar agreements were signed in 1903 with the Duluth Street Railway Company, in which some of the local groups interested in the Highland Company were stockholders, and also with the Superior Water, Light & Power Company, serving Superior across the harbor in Wisconsin.

The consequent relationship with the Duluth Edison Electric Company had a decisive influence upon the course of events at this time. This Company was largely owned by Charles A. Coffin and his associates in the General Electric Company. It was not at that time the very prosperous concern that it became after 1905. It later entered into one of the earliest management contracts with the Electric Bond and Share Company and ultimately (1923) was consolidated with the Great Northern Company to form the Minnesota Power & Light Company. In a letter written in 1911, an official referred to the situation in these early years as follows:

" . . . Mr. Coffin had been of very great value in connection with the Great Northern Power interests; first in using his influence to secure a desirable contract from the Duluth Edison Company for the Great Northern Power Company for the use of its power, before the latter company was financed; second, in assisting the Duluth interests in securing the necessary money . . . for financing; and third, in being very liberal in extending credit to the Company during the time of its need."

The banking firm to which Mr. Coffin referred the situation of the Highland Company in 1902 was Tucker, Anthony

& Company of Boston. One of the four partners in this firm, Mr. Philip L. Saltonstall,[6] took a leading interest in the affairs of the successor Great Northern Power Company for the next 15 years. He was similarly interested in other promoting activities of the firm, much more so than in its brokerage or security-selling activities. Associated with Tucker, Anthony & Company as bankers for the promotion was C. D. Barney & Company of Philadelphia and New York. Although there is no evidence on the point, it is probable that the latter's participation was made a verbal condition of the 1902 contract entered into by McDougall and the Cokefairs for purchase of the Cooke lands at the high price of $500,000. Tucker, Anthony & Company were at this time managing an important plant in Manchester, N. H., several New England street railways (most of them sold to the New Haven a few years later), and were about to undertake the financing of the pioneer Stanislaus project in California, later to become an important part of the Pacific Gas & Electric system. It is thus unlikely that they would have shouldered full responsibility for the project alone. The circle of investors who could be interested in an unbuilt power project was still very small. The Barney firm aided materially by bringing in important new sources of capital—notably the Warden and Harkness families.[7]

The Cokefairs occupied the position of engineer-promoters in this early period. McDougall retained his investment, but was inactive. The friction so commonly seen in such enterprises developed after 1905 between the Cokefairs and Charles A. Duncan, president and the active head of the Duluth group of stockholders. It arose largely from the fundamental difficulty involved in finding places for the two engineers in an organization whose total operating expenses of all kinds (except fixed charges) were only $100,000. By 1908 they were out of the project entirely; they simply had nothing more to contribute. It is also important to note how many of the functions of the promoter were carried on by Tucker, Anthony & Company in getting the project under way. When they took control the project was still entirely on paper.

The Financial Plan

There is evidence that financing plans were held up in the fall of 1903 by the poor market conditions of that period. Early in 1904 it was decided to go ahead with a complete check-up on the whole undertaking. W. A. Brackenridge of Niagara Falls and J. G. White & Company did some preliminary work, while later Blackwell of the outstanding firm of Viele, Blackwell & Buck made a report. After various agreements had been

[6] As a young man during the '90s Saltonstall had been an equipment salesman for the General Electric Company, a connection resulting in large measure from his enthusiasm for that Company's future engendered by his association with a group of Boston investors, many of them like himself young men of wealthy families who had become interested in the concern about 1890. For over 30 years "Boston men" dominated the General Electric directorate. He was at all times a close personal friend of President Coffin and of Sidney Z. Mitchell, and had a large stock interest in the General Electric Company.

[7] In 1882 W. G. Warden had been one of the nine trustees of the old Standard Oil trust, holding about 5% of the certificates. At the same time S. V. Harkness had been holder of nearly 9% of the total. The following generation in each group maintained similar positions in the reorganized Standard Oil Company; in 1899, for example, the three sons of S. V. Harkness held 9% of the total capital stock, compared with Rockefeller's 26%, Pratt's 6%, and Flagler's 3%. These two groups were related by marriage, and one of the Wardens became a Philadelphia partner in the Barney firm. The two families together contributed over ¾ of a million dollars to the Great Northern underwriting.

signed in October, a complete legal investigation was made.[8]

By the terms of the final financing agreement, signed on December 15, 1904, the bankers undertook to exchange stock of a new holding company for the outstanding $4,000,000 stock of the original Northwestern Power & Transportation Company, of which the bulk was still owned by the Duluth group. The bankers further agreed to undertake the task of obtaining financing by the sale of bonds up to a maximum amount of $4,000,000. In addition, $2,000,000 preferred stock was to be authorized for possible sale. The total common stock of the new holding company would be $8,000,000 par value, of which $4,500,000 would go to the old company for distribution to its stockholders, and $2,000,000 would be issued as a bonus to the bankers; the balance would be held in the treasury. In addition, it was agreed that construction would be supervised by the National Railway Construction Company, controlled by Tucker, Anthony & Company. The latter would, finally, receive a separate cash commission of $100,000 for obtaining subscriptions to the bonds, to be divided with Barney & Co. in the ratio of amounts each obtained. The bankers were to have a majority of the directors and the executive committee, and all stock was to be put in a voting trust as well.

The principal assets of the Northwestern Power & Transportation Company have been mentioned: the city franchise of the old Highland Company; the three power contracts with Duluth Edison, Duluth Street Railway, and the Superior Company; a small amount of land on the heights; some options on reservoir land (worth about $50,000); the Cooke contract to sell land, on which $25,000 had been paid; and about $200,000 invested in surveys, negotiations, maps, etc. For these assets the $4,500,000 in common stock of the new holding company was to be issued. It also had liabilities, chief among which was the $475,000 owed as balance on the Cooke contract. These the bankers agreed to assume as part of the construction cost.

The new holding company, Northwestern Power Company, was incorporated in Maine (where Tucker, Anthony & Company had previously organized several similar concerns) and distributed its stock on January 6, 1905. The ratio of exchange for the old Northwestern Power & Transportation Company stock was 1.125 new shares for each old share. The latter Company was thereupon dissolved during 1905, and the potentially discomfiting details of the issue of its stock for "property" obliterated from the record.

The two banking firms had not waited for the final contracts to proceed with arrangements for underwriting. An agreement with the old Knickerbocker Trust Company of New York was signed on November 11, 1904, under which the bank was to lend up to $3,600,000 for a period of 18 months on the security of the underwriting subscriptions, the deposit of the bonds, and the guaranty of the two banking firms. It was expected that at the end of that period a public

[8] The chief points that concerned the bankers, other than the engineering problems involved, were (1) the exact power of the Company to condemn land for its purposes, when its status as a lighting company—and therefore a public utility—was not clearly defined; (2) the right to build an obstructing dam without permission from Congress under the 1899 Act; (3) the existence of possible competing projects that might hold claims or rights which would be serious competitive threats; and (4) the status of the Company under Minnesota tax laws. All these problems required painstaking study both by lawyers and by the promoters, and illustrate the uncertainty under which the latter were forced to work.

sale of the bonds would be feasible. The interest rate was 6%, and a commission of 2% was also charged, or a net rate for the period of about 7⅓%. It was expected that a large proportion of the individual underwriters,[9] who were secured by the two banking firms by private solicitation, would subscribe cash and thereby themselves earn the commission and full interest. This they did, and the original amount lent by the bank was less than $2,000,000; this, however, had to be increased during 1906 and 1907 as construction cost exceeded estimates, and the loan was not cleared up until 1908, after failure of the bank.[10]

The expectation of an early resale of the bonds to the public was severely disappointed. This reflected in part the delay of about a year in completing the plant, but more it reflected the impossibility of selling such bonds in the money market of 1906, 1907, or 1908. The situation was strikingly similar to that affecting proposed issues of bonds in 1929 or 1930. Throughout the late summer of 1906 Tucker, Anthony & Company were in negotiation with two of the leading distributors of utility bonds in Boston. Other firms of lesser standing were told that the issue was not available. But conditions did not improve, and on the excuse that the plant was not in operation (which had been accepted as a premise of negotiation), the two firms decided in December not to buy.

The next two years were a period of constant financial difficulty. It had been decided early in 1907 to enlarge certain portions of the plant at an estimated expense of about $350,000. Actual cost of making the enlargements was just twice this amount. The delay in completing the plant meant not only loss of revenue but also an increased charge to "interest during construction" of nearly $300,000. Early in 1907 and again that summer the underwriters who had loans were asked to take them up to the extent of 50%, and many did so. The original loan agreement with the Knickerbocker was extended once to October 5, 1907, and again at that time for another six months. At the time of its failure total loans to the enterprise were nearly $1,700,000, of which about ½ was owed by the individual underwriters on the original agreement. An additional $1,500,000 of bonds had to be sold in 1908, largely to the same underwriters, to take care of the various excess costs.[11] Not until 1911 was a

[9] The hope of this subscribing group was obviously that the bonds would be quickly resold at about the subscription price (90) when the plant neared completion, to a group of retail bond firms who would market the issue publicly to banks, institutions, or individuals. A minority would undoubtedly choose in such a case to take up the bonds for permanent investment. In either case the underwriter's profit would come from his retention of 5 shares of preferred stock that would ultimately pay $30 a year in dividends and be worth in the market perhaps $425. If the underwriter chose to ask for a loan on his subscription, he would have to pay the interest and commission charges. If he subscribed cash, his income would be 6% plus the 2% commission while awaiting sale of the bonds.

[10] The position of the Knickerbocker Trust in this financing is of interest because of its spectacular failure in late October, 1907, so familiar to students of the 1907 panic. W. A. Tucker, New York partner of Tucker, Anthony & Co., was a director of the bank and close to the autocratic Barney management. Charles T. Barney's wife was a sister of William C. Whitney, and he had been a leader of the clique of real estate speculators who profited in the late '90s and early 1900's by advance knowledge of the location of elevated and subway lines. He was not related to C. D. Barney. The son of the active vice-president of the bank who made the loan became a partner in Tucker, Anthony & Co., at about this time. These loans on unfinished power projects, amounting to about 10% of the bank's total deposits at the time of its spectacular failure (it had made a similar and even larger loan on Tucker, Anthony's Stanislaus development in California mentioned above) were the sort of frozen assets that caused difficulties in the panic.

[11] Through this period of stress, the group of underwriters remained intact, with the exception of two or three officers of the Knickerbocker Trust. This may be assigned to the impossibility of making a sale at any

(Footnote 11 continued on page 56)

public sale of the bonds negotiated, finally to relieve the underwriters of their obligation.

The second instalment of this article will conclude the history of this pioneer project. It will detail some of the major construction difficulties encountered, describe the relations between the company and the General Electric Company, and outline some of the problems in the sale of power and the methods used to promote power sales.

(*Footnote 11 continued from page 55*)

reasonable value to any new people, but it also indicates some degree of confidence and loyalty. Enough of a critical attitude developed to cause C. W. Harkness of the Barney group of investors to take steps to change managerial policies early in 1908, with the full consent of the Tucker, Anthony partners. But otherwise the results of financial difficulty were surprisingly few. About 40 of the original subscribers, or 35% of the group, took additional bonds in 1908, in some cases more than in the proportion of 37½% needed. About 15 new subscribers were secured by the bankers at the same time, under very adverse conditions (June, 1908).

The Outlying Business Centers of Chicago

By MALCOLM J. PROUDFOOT*

The Purpose

THE City of Chicago forms a 211 square-mile crescent of urban land indented by Lake Michigan on the east and inclosed on the north, west, and south by an irregular municipal boundary. This area is inhabited by approximately 3,300,000 people who live a specialized, interdependent existence—an existence made possible by a highly integrated intra- and extra-city net of transportation and communication. Serving the daily commodity and service needs of these three million or more city dwellers are a number of areas of business concentration.[1] These grade in size from the Central Business District with dominant, city-wide importance to the outlying business centers with intercommunity importance, to the neighborhood business streets with only community significance. This investigation seeks to discover the general character of the major outlying business centers as a group on the basis of their street-frontage use, and to relate their character to the spacial, populational, and transportation setting of Chicago.[2]

Preliminary Procedure and Methods

Recognizing and Locating the Centers. Two sources, in part, aided in identifying the major outlying business centers of Chicago. These were: (1) a market analysis of Chicago by districts, published by the General Outdoor Advertising Company;[3] and (2) Olcott's Land Values Blue Book of Chicago, showing the front-foot valuation of every city block.[4] These sources guided a reconnaissance of each center; and as a final check every street car intersection in the City was inspected. The corrected list which resulted designated 20 centers as major (Fig. I), and 92 as minor.[5] The 20 major centers were used as the basis for this study.

Mapping and Delimiting the Centers. In mapping the centers, a street-frontage profile method was utilized.[6] This method was deemed practical because mapping nearly 50 miles of street frontage necessitated a rapid, yet accurate method, to insure data comparable in time. Furthermore, the horizontal frontage occupied by each kind of property use was considered a satisfactory measure of its importance, since rents and taxes are paid on this basis, and

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This is an abridgement of the first half of the author's doctoral dissertation (available in manuscript form, Harper Memorial Library, the University of Chicago, Chicago, Illinois), which in its complete form contains 240 pages, 32 maps, 35 pictures, and 71 tables. The second half of this unabridged manuscript seeks to discover the specific functional character of a center selected as a case study representative of the centers as a group.

[1] Throughout this study the term *business* is used to mean the combination of retail and service functions as apart from wholesale, manufacturing, and industrial functions.

[2] This study is based on field work conducted during the spring, summer, and fall of 1933. The data therefore represent the lowpoint of the depression.

[3] *Twenty-one Cities within the City* (Chicago: General Outdoor Advertising Company, 1929).

[4] George C. Olcott, *Olcott's Land Values Blue Book of Chicago* (Chicago: G. C. Olcott Company, 1933).

[5] All centers characterized by business frontage typical of the largest outlying centers, and possessing over one mile of such frontage when combining the frontage of all stories, were considered to be major centers. All centers with a combined frontage of less than one mile of this type were classified as minor centers. This distinction was borne out by the character and appearance of the centers mapped.

[6] A. E. Parkins, "Profiles of the Retail Business Section of Nashville, Tennessee," 20 *Annals of the Association of American Geographers* 164-175 (1930).

building depths and story heights are essentially uniform.[7]

The central nucleus of each major center possesses a marked multi-storied concentration of diverse kinds of large retail and service establishments depending on customers from a wide area. The boundaries of the major centers vary considerably in character. In many cases the boundaries were difficult to establish because of their transitional character. The solution of the problem required the inclusion of the large establishments characteristic of the centers and the exclusion of all other types of land use.[8] For clarity in classification, the following seven boundary types were recognized and named according to the type of land use which was excluded: (1) the neighborhood business boundary; (2) the residential boundary; (3) the vacant property boundary; (4) the wholesale boundary; (5) the congregational boundary; (6) the transportation boundary; and (7) the passive boundary.[9]

Classifying Street-Frontage Use at the Centers. After locating, mapping, and delimiting the major centers, it was necessary to classify the 174 individual kinds of street-frontage use occurring within them. The classification devised recognizes nine classes of street frontage, based on commodity use and service function: (1) the "retail for internal use" class, which is designed to include all establishments retailing commodities to be consumed internally by human beings, such as bakeries, drug stores, food marts, restaurants, taverns, and tobacco stores; (2) the "retail for personal use" class, which is designed to include all establishments retailing commodities considered as constituting personal belongings, such as clothing stores, gift shops, jewelry stores, men's and women's clothing stores, and shoe stores; (3) the "retail for group use" class, which is designed to include all establishments retailing commodities for use by groups, such as auto accessory stores, new and used auto sales rooms, furniture stores, lumber stores, radio stores, and stationery and office supply stores; (4) the "retail for multiple use" class, which is designed to include all establishments retailing commodities of

[7] A map scale of 1:1400 was employed. The frontage taken by individual establishments, residential use, and vacant property was paced off and corrected to known distances measured from the 1:24000 U.S.G.S base maps of Chicago. By this method a three-story building with 50 feet of street frontage represents 150 feet of combined frontage.

[8] Boundaries were based entirely on evidence observed in the field. Land values were not used since, for the most part, they bore little relation to land use. Volume of sales data might furnish an excellent basis for delimiting these centers when used in combination with the map record. However, such data may not be obtained except by employees of the Bureau of the Census, who have taken an oath to make no such disclosures.

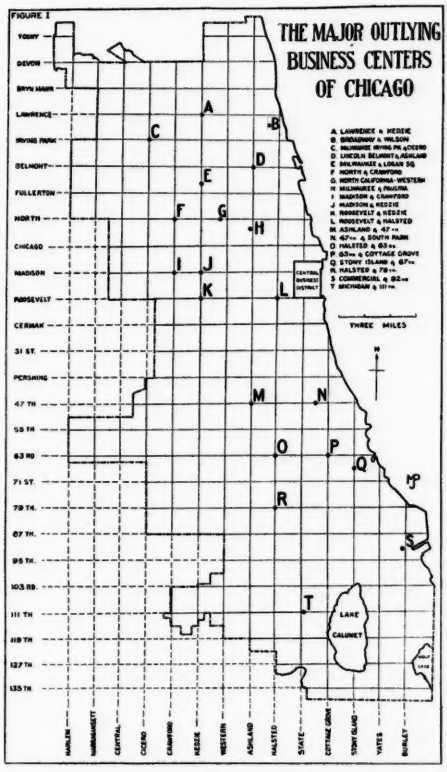
[9] *Boundaries of the neighborhood business type* are drawn at the mid-point of transition between frontage truly characteristic of the major centers (department stores, rows of women's and men's clothing stores, variety stores, furniture stores, shoe stores, etc., with upper-story use by service establishments) to that equally characteristic of neighborhood business streets (grocery stores, fruit and vegetable markets, butcher shops, shoe repair shops, etc., with the upper stories devoted to apartments). *Boundaries of the residential type* are marked by an abrupt change in the use of street-level frontage characteristic of major centers to such residential use as apartments, houses, and apartment hotels. *Vacant property boundaries* are drawn at the beginning of wide stretches of vacant property, either unoccupied buildings or vacant lots, and past which the street frontage assumed a character of use different from that typical of the major centers. *Boundaries of the wholesale type* are easily distinguished by a change in street-frontage use to that dominated by wholesaling and jobbing establishments. *The congregational boundary type* is marked by an abrupt change in street frontage from retail and service establishments typical of the centers to frontage utilized for public parks, school buildings, libraries, or churches. *Boundaries of the transportation type* are drawn to exclude street frontage devoted to street car barns and wide railroad viaducts from the retail and service frontage of the centers. *Passive boundaries* are drawn to exclude street frontage consisting of the sides or rear of buildings facing some other street than the one being mapped. (Credit is due Willis H. Miller for originating this passive boundary distinction.)

such a wide variety that they would be included in several of the preceding classes, such as department stores and five-ten and dollar stores; (5) the "personal service" class, which is designed to include all frontage occupied by persons rendering service of a personal nature, such as doctors, dentists, chiropodists, and barbers; (6) the "group service" class, which is designed to include all frontage occupied by persons or firms rendering service to family or business groups, such as auto repair shops, garages, banks, telephone stations, and decorators; (7) the "recreational" class, which is designed to include all establishments offering amusement or recreation, such as motion picture theaters, dance halls, and bowling alleys; (8) the "residential" class, which includes upper-story apartments and transient hotels; and (9) the "vacant property" class, which includes all vacant or unused frontage whether in the form of buildings or vacant lots.

The Urban Setting of the Centers

In order to understand the distinctive retail and service functions of the major outlying business centers, it is necessary to consider them in their spacial, populational, and transportational relations to the City as a whole.

The Spacing of the Centers within Chicago. The centers form an irregular, widely spaced, and yet evenly balanced semi-circle about the mid-point of the Central Business District (Fig. I).[10] Access to these centers is afforded by a street grid planned to meet the needs of intracity communication. The entire urban area is grooved by a rectangular street grid. The streets are oriented to the cardinal points of the compass, and provide direct connection only in three



directions between the Central Business District (blocked to the east by Lake Michigan) and the outskirts of the City. To be sure, 12 diagonal streets afford some direct access to the northwest, southwest, and southeast, but in only two cases do these streets enter directly into the Central Business District (Fig. II). To this broad view must be added the natural complications produced by the shore of Lake Michigan, which abruptly cuts off street after street on the South Side, as well as such man-made interruptions as the Chicago Ship Canal with its numerous slips and warehouses, the many large cemeteries, the frequent railroad and factory yards, and the state of disrepair prevalent on many of the residential streets of the City.

[10] For purposes of measurement, the intersection of State and Madison Streets was taken as the mid-point of the Central Business District.

These conditions are naturally manifested by the differential between the linear spacing of the centers and their actual spacing within the street grid—conditions which favor the commercial function of the centers in competing, not only with the Central Business District, but each with its nearest rival (Tables I and II).

TABLE I. INCREASE IN MILES FROM LINEAR TO STREET DISTANCES BETWEEN THE MAJOR OUTLYING BUSINESS CENTERS AND STATE AND MADISON

Center	Linear Miles	Street Miles	Increase in Miles
T. Michigan & 111th....	13.00	14.17	1.17
S. Commercial & 92nd..	11.00	13.32	2.32
R. Halsted & 79th.....	9.00	10.87	1.87
Q. Stony Island & 67th..	7.75	8.65	0.90
C. Milwaukee Irving Park & Cicero.....	7.70	8.05	0.35
P. 63rd & Cottage Grove	7.00	8.20	1.20
O. Halsted & 63rd.....	7.00	8.84	1.84
A. Lawrence & Kedzie...	7.00	8.10	1.10
B. Broadway & Wilson..	5.80	6.15	0.35
F. North & Crawford...	5.30	5.85	0.55
M. Ashland & 47th.....	5.25	7.80	2.55
N. 47th & South Park...	5.00	6.20	1.20
I. Madison & Crawford.	5.00	5.00	0.00
E. Milwaukee & Logan Square.....	5.00	5.35	0.35
D. Lincoln Belmont & Ashland.....	4.35	4.75	0.40
K. Roosevelt & Kedzie..	4.10	4.50	0.40
J. Madison & Kedzie...	4.00	4.00	0.00
G. North: California to Western.....	3.75	4.20	0.45
H. Milwaukee & Paulina.	2.70	2.95	0.25
L. Halsted & Roosevelt..	1.40	2.50	1.10
Average.....	5.96	6.90	0.94

These tabulations show the spacial relationship of each of the 20 major centers to the mid-point of the Central Business District, and of each center to its nearest rival center. Two important conclusions are apparent: (1) that the commercially favorable decentralization and isolation of the centers, with reference to the Central Business District, are accentuated by the advantageous differential between linear and actual street distances in Chicago; and (2) that the individual centers, though not favored by an important differential between linear and actual street distances to and from their nearest neighbors, are nevertheless widely spaced throughout the urban area of Chicago, and consequently enjoy a marked degree of isolation relatively free from the rivalry of other centers.

The Population Setting of the Centers. The centers enjoy a marked business advantage of close proximity to the commodity- and service-purchasing decentralized population of Chicago. This condition is revealed by Table III and Figure I. It will be noted that nearly 50% of the total city population of 3,376,438 (or 1,591,700 people) live within one mile of the centers; and that on the average 88,600 people live within

TABLE II. INCREASE IN MILES FROM LINEAR TO STREET DISTANCES BETWEEN EACH CENTER AND ITS NEAREST NEIGHBOR

Center	Nearest Center	Linear Miles	Street Miles	Increase in Miles
T. Michigan & 111th...	R.	4.10	6.30	2.20
S. Commercial & 92nd..	Q.	3.50	3.90	0.40
L. Halsted & Roosevelt.	K.	3.00	3.00	0.00
A. Lawrence & Kedzie..	B.	2.60	2.75	0.15
C. Milwaukee Irving Park & Cicero....	E.	2.60	2.60	0.00
M. Ashland & 47th.....	N.	2.50	2.50	0.00
R. Halsted & 79th.....	O.	2.00	2.00	0.00
P. 63rd & Cottage Grove	Q.	2.00	2.00	0.00
O. Halsted & 63rd.....	R.&P.	2.00	2.00	0.00
N. 47th & South Park..	P.	2.00	2.50	0.50
D. Lincoln Belmont & Ashland.....	B.	1.80	2.10	0.30
B. Broadway & Wilson	D.	1.80	2.10	0.30
F. North & Crawford...	G.	1.75	1.75	0.00
E. Milwaukee & Logan Square.....	G.	1.40	1.75	0.35
G. North: California to Western.....	H.	1.25	1.37	0.12
H. Milwaukee & Paulina	G.	1.25	1.37	0.12
Q. Stony Island & 67th.	P.	1.10	1.50	0.40
I. Madison & Crawford	J.	1.00	1.00	0.00
J. Madison & Kedzie...	I.	1.00	1.00	0.00
K. Roosevelt & Kedzie..	J.	1.00	1.00	0.00
Average.....		1.98	2.22	0.24

TABLE III. TOTAL POPULATION WITHIN ONE MILE OF THE OUTLYING BUSINESS CENTERS AND OF STATE AND MADISON*

Center	Population for 1930
G. North: California to Western	131,600
H. Milwaukee & Paulina	131,400
N. 47th & South Park	128,200
K. Roosevelt & Kedzie	122,800
E. Milwaukee & Logan Square	103,300
D. Lincoln Belmont & Ashland	102,100
P. 63rd & Cottage Grove	93,600
I. Madison & Crawford	92,500
J. Madison & Kedzie	91,500
B. Broadway & Wilson	89,300
O. Halsted & 63rd	88,200
L. Halsted & Roosevelt	86,500
Q. Stony Island & 67th	84,000
F. North & Crawford	82,600
A. Lawrence & Kedzie	81,900
M. Ashland & 47th	62,500
R. Halsted & 79th	57,500
C. Milwaukee Irving Park & Cicero	56,200
T. Michigan & 111th	46,600
S. Commercial & 92nd	39,800
Total corrected for overlap	1,591,000
Average	88,600
State & Madison	24,700

* Based on the Population Census of 1930 by enumeration districts, taken from Ernest W. Burgess and Charles S. Newcomb, *Chicago Census by Local Communities*, Vol. II (Chicago: University of Chicago Press, 1933).

one mile of each center, whereas only 24,700 people live within one mile of State and Madison. When the contiguous urban population is added to the outlying municipal population, it may be conservatively estimated that 2½ million people living within the Chicago urban area are nearer to the centers than they are to the Central Business District.[11] This advantage of proximity is directly related to the size and commercial importance of the centers, although this relationship, in the case of individual centers, is modified to a degree by the availability of specific modes of intracity transportation.

The advantage enjoyed by the centers resulting from adjacent, densely settled residential areas, conditioned by available transportation, is augmented by other characteristics possessed by these areas. Seventeen centers are located in peripheral portions of the City where population density has shown a steady increase since 1920, and only three centers (H, L, and M) are located within the central zone of decreasing population. In addition, the centers are favored by their proximity to residential land of high value,[12] which indicates the greater buying power of the resident population.

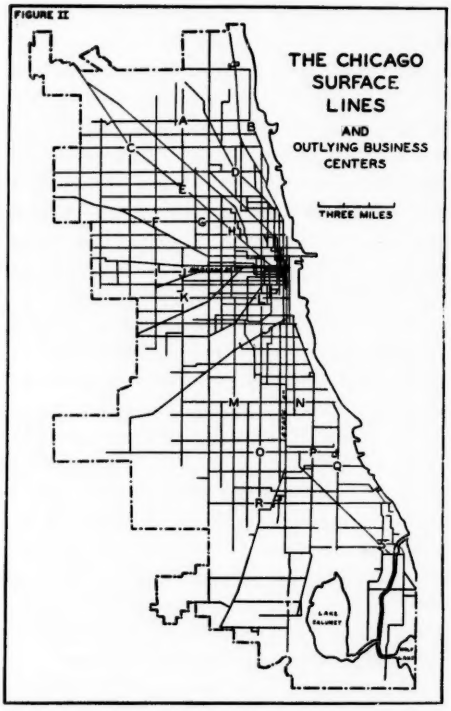
The Transportation Setting of the Centers. The centers depend in large measure on customers drawn from widely spaced residential areas. It is, therefore, necessary to gain an understanding of how the centers are served by various modes of intracity transportation—namely, street cars, vehicles, elevated trains, and motor coaches.

Street Car Transportation. Every center is served by at least one street car line, the majority are served by two, and several are served by three such lines (Fig. II). This gives transportation access in from two to six directions both to and from each center. Further, these street car lines are joined by connecting lines which together form a gigantic double-tracked rectangular net, so complete that few inhabited city blocks of the 211 square miles of municipal Chicago are more than ½ mile from this means of transportation. The accessibility of this service, a seven-cent fare, and a liberal transfer policy combine to make street cars of paramount

[11] For 1930, the Bureau of the Census records the metropolitan population of Chicago as 4,364,755 inhabitants, listing 988,317 inhabitants outside the municipal limits of the City. This metropolitan area, however, represents considerably more territory than the Chicago urban area, or contiguous urbanized area of the City. See Clarence E. Batschelet, *Fifteenth Census of the United States: 1930, Metropolitan Districts* (Washington: Government Printing Office, 1932), pp. 48-51.

[12] Homer Hoyt, *One Hundred Years of Land Values in Chicago* (Chicago: University of Chicago Press, 1934.)

FIGURE II



importance as customer-transporting agents to and from the centers.

On the average, some 25,000 street cars pass the centers each 12-hour workday, and 1,250 pass each center during the same period. This traffic ranges from 2,120 cars at the Milwaukee-Paulina center to 521 cars at the Michigan-111th center. A long average round trip travelling time, via street car, from the centers to the mid-point of the Central Business District, totalling 79 minutes, is an added incentive for many people dependent on this mode of transportation to transact their business at some outlying business center.[13] The heavy traffic and low cost of this transportation stimulate this incentive.

Vehicular Transportation. Every center is located on one or at the intersection of two or more main vehicular arteries. These main arteries each have a vehicular traffic of from 15,000 to 30,000 units per 24 hours, and contrast sharply with the side streets which carry 1,000 units or less during the same period.[14] The extraordinary concentration and mobility of vehicular transportation on these main streets are better understood when it is realized that this condition largely results from the movement of some 450,000 automobiles, trucks, and taxicabs,[15] the ownership of which is rather uniformly distributed over the inhabited areas of the City at an average rate of 2,000 per square mile.[16]

On the average, some 341,000 vehicles pass the centers from 7 A. M. to 7 P. M., based on an estimated ⅔ of the total for 24 hours, and 17,000 pass each center during the same period. This traffic ranges from 29,000 vehicles at the Lincoln-Belmont-Ashland center to 5,000 at the North between California and Western center. The privately owned nature of most vehicles, the excellence of the boulevard systems, and the synchronized stop lights of Chicago make an average vehicular speed of 20 miles per hour probable. At this speed and based on the shortest street distances, the average round trip from each center to the mid-point of the Central Business District requires 42 minutes. This rapid round trip might be a detriment to the centers if it were not offset by the parking difficulties in the central

[13] Based on average running time and frequency data furnished by F. A. Forty of the Chicago Surface Lines.

[14] M. McClintock, *Map of the Vehicular Traffic Flow on the Principal Routes of the Greater Chicago Traffic Area* (Chicago: General Outdoor Advertising Company, 1930).

[15] *The Chicago Daily News Almanac and Year Book, 1934* (Chicago: Chicago Daily News, 1934), p. 372.

[16] Vehicular registration count by square miles, as of July 1, 1929, furnished through the courtesy of B. L. Robbins of the General Outdoor Advertising Company, Chicago, Illinois.

district; but the heavy vehicular traffic passing the centers, where an abundance of near-by parking space is available, functions to their advantage.

Elevated Transportation. Elevated transportation, which is primarily oriented with reference to the Central Business District, is lacking in interconnecting lines and consists of four main spurs running from the Loop to the north, west, and south, serves only nine centers. In addition, this service is rendered at the inconvenience of a climb to a second-story platform, at a relatively high fare,[17] and, in three cases requires a five-minute walk. These conditions, and particularly the centrality of orientation of the elevated lines which gives this mode of transport a rapid route to the Central Business District, function as detriments to growth of the outlying business centers.

Motor Coach Transportation. Motor coach transportation, as in the case of the elevated lines, is likewise oriented by its spoke-like routes to serve best the Central Business District and to function largely as a detriment to the commercial growth of the centers. Fortunately for the centers, only six of their number are served by motor coaches.[18]

Comparison of the Modes of Transportation. To bear out further the above statements pertaining to relative importance of the four modes of transportation serving the centers, it is significant to make a comparison based on estimated passenger traffic passing the centers. Allocating 2.5 passengers to each vehicle, 40 passengers to each street car and elevated car, and 25 passengers to each motor coach, Table IV shows the outstanding importance of street car and vehicular transportation, which carries approximately 82.9% of the passengers passing the centers, and the minor importance of the centrally oriented elevated and motor coach transportation.[19]

TABLE IV. THE RANK OF EACH MODE OF INTRACITY TRANSPORTATION BASED ON ESTIMATED PASSENGER TRAFFIC PASSING THE CENTERS DURING AN AVERAGE TWELVE-HOUR WORK DAY

Mode of Transportation	Passengers	Per Cent
Street car	1,006,000	44.9%
Vehicular	852,000	38.0
Elevated	342,000	15.2
Motor coach	41,000	1.9
Totals	2,241,000	100.0%

Transportation Ranking of the Centers. By giving a composite ranking of the centers based on all four modes of intracity transportation, discounting the figures somewhat because of the inclusion of passengers transported by elevated trains and motor coaches, it is striking to find that an average of 112,000 passengers enter, leave, or pass by the centers each day; and that there is a maximum variation of 183,000 passengers passing the Broadway-Wilson center and a minimum of 43,000 passing the Michigan-111th center, with a gradual gradation for the other centers between these two extremes.[20]

[17] The differential between elevated and street car fares has been lowered since this study was made.

[18] In addition to the elevated and motor coach lines, the suburban service of the Illinois Central, the Rock Island, the Chicago & Northwestern, and the Burlington railroads operates as a detriment to the growth of outlying centers. This is particularly manifest at the Stony Island-67th center, the small size of which in large measure reflects the detrimental effect of the Illinois Central service to the Central Business District. Other outstanding examples are to be found at 71st and Jeffery, Ashland and 95th, and at 63rd and Dorchester.

[19] Estimates all as of May, 1934, furnished through the courtesy of F. A. Forty of the Chicago Surface Lines, C. E. Thorney of the Chicago Rapid Transit Company, and P. J. Boesen of the Chicago Motor Coach Company.

[20] In addition, it should be remembered that a large proportion of the 1,591,000 people residing within a one-mile radius of these centers (Table III) probably walk to them each day.

An Analysis of the Centers

The 45.06 linear miles of street-frontage use within the centers as a group are divided into the classes shown in Table V. By combining the percentages, one notes that the retail uses comprise 41.5% and the service and recreational uses 26.5% of street frontage within the centers. The high proportion of vacant property, comprising 17%, is probably in part accounted for by the depressed real estate and general business conditions prevailing during 1933; whereas the rather high proportion of residential frontage indicates the pressure of city population for dwelling space.

TABLE V. CLASSES OF STREET-FRONTAGE USE AT THE MAJOR CENTERS

Class of Frontage	Per Cent
Vacant property	17.0%
Residential use	15.0
Personal service	14.1
Retail for personal use	10.9
Retail for internal use	10.5
Retail for multiple use	10.5
Retail for group use	9.6
Group service	7.5
Recreational use	4.9
Total	100.0%

Individual Kinds of Street-Frontage Use. By ranking the individual street-frontage use by classes and by showing the importance of each individual kind of street-frontage use within each class it is possible to gain a detailed understanding of the functional structure of the centers. This analysis is rendered still more complete when the classes of street-frontage use at the centers, by stories, are compared with the average of all stories.

Retail for Internal Use. The street frontage occupied by establishments of the retail for internal use class comprises 4.73 miles, and is divided among 15 principal kinds of use, of which restaurants and drug stores occupy 46.3%.

Retail for Personal Use. Establishments of the retail for personal use class comprise 4.91 miles of street frontage. This frontage includes 11 principal kinds of use, dominated by women's and men's clothing stores with a combined total of 65.8%.

Retail for Group Use. The street frontage used by establishments of the retail for group use class comprises 4.33 miles, and contains 15 principal kinds of use, of which furniture stores and auto sales establishments outrank all other kinds with a total of 57.8%.

Retail for Multiple Use. The retail for multiple use class of street frontage comprises 4.73 miles, divided among five-ten and dollar stores, totalling 61.8%; Maxwell Street pushcart frontage, totalling 28.7%, and department stores, totalling 9.5%. In spite of the low proportion occupied by department stores, their presence imparts an appearance of commercial importance to the centers akin in a minor degree to the appearance of the Central Business District.

Personal Service. Personal service uses occupy 4.73 miles, and consist of 16 principal kinds of use, with offices of doctors and dentists comprising 48.8% of the street frontage in this class. This class of frontage is largely localized in the upper stories of the centers, thus indicating the intensity of land use.

Group Service. The group service class of street-frontage use comprises 3.38 miles, and divides into 14 principal kinds of use, of which none is particularly outstanding. However, currency exchanges (banks prior to November, 1929) and furniture storage warehouses head the list with a combined total of 36.8%.

Recreational. Recreational uses occupy 2.21 miles of frontage and embrace six principal kinds of use, which are

outstandingly dominated by motion picture theaters with 66.1% of the total frontage.

Residential. The residential class of street-frontage use comprises 6.76 miles. This frontage, which is large in total but insignificant in function, is divided between apartments taking 67.3% and hotels taking 32.7%, respectively.

Vacant Property. The vacant property class comprises a large total of 7.66 miles of street frontage, divided into: vacant business property, 83.0%; vacant residential property, 14.5%; and vacant lots, 2.5%. The intensity of land use at the centers is indicated by the small amount of vacant lot frontage, while the overdeveloped or depressed business conditions are revealed by the abundance of vacant business property.

The Rank of the Individual Kinds of Street Frontage. The rank of the 15 leading individual kinds of used and idle street frontage is shown by Table VI. These 15 uses comprise 31.91 miles, or 70.8% of the total frontage within the centers, and, of them, seven uses comprise nearly ½ of the combined frontage.

Analysis of Street-Frontage Use by Stories. Urban land use in general is characterized by multi-storied buildings. This is particularly characteristic of the major outlying business centers of Chicago. Because of this vertical concentration of land use, an analysis of the functional structure of the centers remains incomplete until this structure is revealed by stories, compared to the average of all stories.[21]

The First Story. The street-level frontage of the centers comprises a total of 20.83 miles, or 46.2% of the total frontage of all stories within the centers. By comparing the street-level frontage with the total frontage of all stories it was found that the former frontage is characterized by: (1) a concentration of retail establishments, among which those retailing commodities for personal use predominate: (2) a lack of concentration of service functions; (3) a virtual absence of residential use; and (4) a relatively healthy condition of land use indicated by the presence of only 10.3% of vacant property in contrast to the average of 17% for all stories of the centers combined.

TABLE VI. MOST IMPORTANT INDIVIDUAL KINDS OF STREET-FRONTAGE USE AT THE CENTERS

Street-Frontage Use	Per Cent
Vacant business property	14.7%
Apartments	9.5
Five-ten & dollar stores	8.3
Women's clothing stores	4.8
Hotels	4.6
Furniture stores	4.0
Maxwell street pushcart frontage	3.8
Dentists' offices	3.7
Motion picture theaters	3.1
Restaurants	2.8
Doctors' offices	2.8
Men's clothing stores	2.6
Vacant residential property	2.5
Shoe stores	2.0
Drug stores	1.6
All Others	29.2
Total	100.0%

The Second Story. The second-story frontage totals 13.74 miles and comprises 30.5% of the total frontage of the centers. By comparing the second-story frontage with total frontage of all stories it was found that the former

[21] Since it is necessary to make comparisons between the use of individual stories and the average of all stories, and between individual centers and the average of all centers, the descriptive words *healthy*, *unhealthy*, and *normal* will be frequently used. The best single index to the health of urban land use, in the opinion of the author, is a small proportion of idle land or vacant property. In each case the norm used is the average per cent of idle land or property. Deviations above or below this norm characterize the level of land use, or the land use of individual centers, as healthy or unhealthy.

frontage shows a marked change in character from the street level. At the second-story level personal service becomes dominant, whereas three classes of retail frontage have dropped to insignificant proportions. Likewise, residential use has increased 4% over the average for all stories. Finally, an increase of nearly 6% in vacant property indicates the relatively unhealthy condition of building occupance at this level.

Above the Second Story. The trend away from retail use, noted for the second story, continues above the second story with the exception of department store frontage. Residential use experiences a marked increase of nearly 17% over the average of such frontage for all stories, and comprises a total of nearly 32% of the frontage above the second story. Likewise striking is the steady increase of vacant property from that present at the second story to a total of nearly 24% for frontage above the second story. Thus, if the percent of vacant property above or below the average may be used as a criterion for judging the health of land use at the centers, the frontage of the centers above the second story represents a most unhealthy condition.

Street-Frontage Use at Each Center Related to the Urban Setting of Each Center. Before analyzing the functional structure of the individual centers and explaining some of the factors contributing to their commercial condition, it is necessary to provide an overview of the variations among the individual centers with respect to total size, business concentration, service concentration, and vacant property.

On the average the centers comprise a total of 2.25 miles of frontage, but individually they grade gradually in size both above and below this average. The extreme variation in size is shown by such centers as Halsted-Roosevelt and Halsted-63rd, which comprise nearly four times as much frontage as such small centers as Madison-Kedzie and 47th-South Park.

On the average the individual centers are characterized by business concentration comprising 68% of their total frontage.[22] Here again, as in the case of size, the proportion of business concentration gradually grades from 81% at the Halsted-Roosevelt center to 44% at the Stony Island-67th center.

Only the Halsted-Roosevelt, the Lincoln-Belmont-Ashland, and the Halsted-63rd centers have a marked concentration of retail frontage.[23] At all other centers, retail establishments occupy less than 50% of the total frontage, and these retail uses gradually grade downward to the insignificant total of 18.7% within the Stony Island-67th center.

With the exception of the Halsted-Roosevelt center, the other centers individually show a gradual variation in service concentration above and below their average of 21.6%.[24] The Halsted-Roosevelt center, however, is almost lacking in service occupance, a condition which is largely attributable to the virtual absence of office space occupied by doctors and dentists. In the case of the two centers showing the greatest service concentration, namely Broadway-Wilson, and Milwaukee-Irving Park-Cicero, this concentration is explained in the former center by the presence of

[22] Business concentration is determined by combining the percentage of each center devoted to the four retail, the two service, and the recreational classes.

[23] Retail concentration is determined by combining the percentages of each center devoted to the four retail classes.

[24] Service concentration is determined by combining the percentages of each center devoted to the two service classes.

a 12-story office building used almost exclusively by doctors and dentists, and in the latter center by the presence of several large insurance offices occupying several upper floors of a large corner building.

The range in the percentage of vacant property within the individual centers is wide (Table VII). Using the per cent of vacant property as the index of the commercial health of each center, it is obvious that some centers, as of the depression year of 1933, are commercially healthy, others are to be described as normal, and still others are unhealthy.

TABLE VII. PER CENT OF VACANT PROPERTY AT EACH CENTER COMPARED TO THE AVERAGE OF ALL CENTERS

Center	Per Cent of Vacant Property	Deviation from Average
Q. Stony Island & 67th	5.2%	−11.8
A. Lawrence & Kedzie	8.7	− 8.3
N. 47th & South Park	9.0	− 8.0
O. Halsted & 63rd	10.2	− 6.8
M. Ashland & 47th	10.9	− 6.1
F. North & Crawford	11.6	− 5.4
T. Michigan & 111th	13.9	− 3.1
S. Commercial & 92nd	14.6	− 2.4
L. Halsted & Roosevelt	15.3	− 1.7
D. Lincoln Belmont & Ashland	16.8	− 0.2
B. Broadway & Wilson	18.4	1.4
P. 63rd & Cottage Grove	18.5	1.5
J. Madison & Kedzie	20.0	3.0
I. Madison & Crawford	20.4	3.4
E. Milwaukee & Logan Square	20.7	3.7
R. Halsted & 79th	20.9	3.9
G. North: California to Western	22.2	5.3
C. Milwaukee Irving Park & Cicero	24.4	7.4
K. Roosevelt & Kedzie	25.3	8.3
H. Milwaukee & Paulina	34.0	17.0
Average	17.0%	

The healthy centers are six in number (Q, A, N, O, M, and F on Fig. I), the normal centers are ten in number (T, S, L, D, B, P, J, I, E, and R), and the unhealthy centers (G, C, K, and H), though numerically small, possess a marked concentration of vacant property.

The Healthy Centers. With one exception (center O), the commercially healthy centers are below average in size; they possess a most heterogeneous functional structure; and they are widely and irregularly spaced within the municipal limits of Chicago, so that four centers (Q, N, O, and M), are located on the south and southwest sides and only two centers (A and F) are located on the northwest side of the City. In relating the character of street-frontage use at each center to the urban setting of each, the following conditions in part account for their healthy commercial condition: (1) the transportational inaccessibility of the residential area surrounding the centers to the Central Business District, either because of the absence of rapid elevated, motor coach, or suburban railroad service, or of the lack of diagonal streets leading directly to the downtown district; (2) relative isolation from competing centers; (3) the presence of heavy street car and vehicular traffic, making the centers in question relatively accessible to the surrounding residential areas; (4) densely populated and prosperous adjacent residential areas; (5) the absence of wide parkways, parks, cemeteries, factory grounds, and railroad yards adjacent to and, therefore, blocking the growth of these centers; (6) the presence of adjacent residential areas populated by foreign born, yet steadily employed, workmen and their families; and (7) the possession of a unique commercial character.

The Normal Centers. The commercially normal centers, though irregularly spaced, are rather evenly distributed, with four on the South Side, three on the West Side, and three on the North Side of the City. These centers vary greatly in total size, with six centers above average and four below average

in total frontage. In relating the character of street-frontage use within each of these centers to the urban setting of each, the above enumerated conditions in part accounted for their relatively healthy commercial condition.

The Unhealthy Centers. Three of the unhealthy centers are located on the northwest side of the City (C, G, and H), one on the west side (K), and none on the south side. In general, these unhealthy centers are of average size, with two somewhat above and two somewhat below average in total street frontage. In relating the character of street-frontage use at each of these centers to their urban setting, the following conditions, which likewise applied to some of the normal centers, were found to be detrimental to commercial health: (1) the transportational accessibility of the Central Business District to the residential areas adjacent to these centers, provided by rapid elevated, motor coach, or suburban railroad service, or the presence of diagonal streets providing direct street car and vehicular routes to the downtown district; (2) the proximity of competing centers, as well or better provided with street car or vehicular transportation than enjoyed by these centers; (3) the lack of important street car transfer corners at the heart of one of these centers; (4) light street car and vehicular traffic rendering the surrounding residential areas relatively inaccessible; (5) thinly populated yet prosperous adjacent residential areas; and (6) the presence of wide parkways, parks, cemeteries, factory grounds, and railroad yards adjacent to and, therefore, blocking the growth of commercial occupance.

The Need for Intracity Business Census Tabulations

This investigation points to the definite need for intracity business tabulations by the Bureau of the Census. This need has been recognized and research has been undertaken by this Bureau to the end that permanent intracity business areas may be established. When such data are available it should be possible, among a host of other practical uses, to draw pertinent comparisons among outlying business centers, the Central Business District, and neighborhood business streets of the City of Chicago, and similarly for other cities. The author recognizes that the street frontage occupied by retail and service establishments bears only a partial relation to the commercial importance of such outlets. The basic criterion is the volume of business done by these outlets, and until intracity Census data are available, this and other similar studies can only approximate the results desired of a substantially complete analysis.

Conclusions, Hypotheses, and Recommendations

This investigation, it should be recalled, sought to discover the general character of the major outlying business centers of Chicago on the basis of their street-frontage use and to relate their character to the spacial, populational, and transportation setting of the City. This investigation led to 11 conclusions, substantiated in varying degree by the facts developed during the progress of this analysis. In addition, six hypotheses are given, which, though not herein completely substantiated, were nevertheless strongly suggested by the analysis and the details of the investigation. Finally, several related investigations are recommended which would do much to complete the study of the major elements of the business structure of the City of Chicago.

Conclusions. The following conclusions were drawn from the foregoing

analysis of the outlying business centers of Chicago:

1. From a total of 112 outlying business centers, 20 are of major and 92 of minor size and significance.

2. The centers are commercially favored by a wide, decentralized spacing, which in relation to the Central Business District is rendered more advantageous by the increase in actual street distances over linear distances and which, with reference to the inter-relationship of the centers, has resulted in a degree of isolation relatively free from business rivalry.

3. The decentralized centers are commercially favored by their close proximity to the decentralized population of Chicago, a population, for the most part, with an increasing residential density and a high per-capita buying power.

4. The centers are further rendered accessible to the commodity-purchasing and service-paying resident population of Chicago by being most adequately served by street car and vehicular transportation, to the end that an average of over 100,000 passengers per day leave and enter each center.

5. The individual kinds of street-frontage use characterizing the centers include "five and ten cent" stores; women's and men's clothing stores, furniture stores, dentists' and doctors' offices, motion picture theaters, restaurants, shoe stores, and drug stores.

6. The centers as a group possess a high proportion of vacant property, of which that suitable for business use predominates.

7. Within the centers, apartments occupy considerably more frontage than that occupied by hotels.

8. Combining the frontage of all centers, on the basis of the per cent of vacant property and the per cent of business concentration, the commercial condition of the street-level frontage is healthy, the second story is relatively unhealthy, and the levels above the second story are most unhealthy.

9. The individual centers vary greatly in size, in business concentration, in retail concentration, and in service concentration.

10. On the basis of the per cent of vacant property, the commercial condition of six centers is healthy, of ten is normal, and of four centers is most unhealthy.

11. The commercial health of the individual centers is chiefly related to the transportational accessibility or relative inaccessibility, afforded by street cars and vehicles, of the adjacent densely or thinly populated residential areas, either to and from each center or to and from the Central Business District.

Hypotheses. The following hypotheses are drawn from the foregoing analysis of the major outlying business centers of Chicago:

1. A number of uprooting tendencies, such as the deterioration of real estate, dirty, noisy surroundings, the lack of play space for children, the danger to children resulting from traffic congestion, the nuisance of soot-filled air, and the high property taxes at work within the older portions of Chicago, and the attractive qualities within the peripheral areas, such as newer residences, ample play space for children with little danger from traffic congestion, clean, quiet surroundings, low property taxes, and improved transportation facilities to and from the Central Business District have combined to produce a centrifugal force in large measure accounting for decentralization of residential settlement manifested by densely populated outlying areas, and the development of the 20 major outlying business centers which meet the commodity and

service needs arising within those areas.

2. These outlying business centers receive only a small proportion of the potential business volume represented by their surrounding customer tributary areas, and the major portion of this business volume is attracted by the Central Business District.

3. Over ½ of the customers attracted to the outlying business centers are women; many women prefer to shop near their residences because the time consumed in rearing a family limits their shopping time, a limited budget encourages walking, and space for parking an automobile can commonly be found at any of the centers.

4. Outlying business centers rise and fall, become of major size or retrograde into the minor size class, as the residential areas they serve improve or deteriorate.

5. The presence of suburban boundaries causing an extra-fare break in the transportation lines of Chicago is a limiting factor in the growth of most major outlying business centers, and in part accounts for their location well within the urbanized portion of the city, although densely populated areas may extend for several miles beyond the municipal limits.

6. The outlying business centers of Chicago are satellites of the Central Business District, and although individually they are completely eclipsed in importance by the latter, their aggregate business turnover probably approximates ⅔ that of the dominant district.

Recommendations. Finally, this analysis has suggested several additional studies which would not only add to our present knowledge of the outlying business centers of Chicago but would further a relatively complete understanding of other major elements of the business structure of this City. Particularly valuable would be a historical analysis of one or more of these major centers, with a view to discovering the centrifugal and centripetal forces which have shaped their growth, and in some cases have caused retrogression. In addition, a functional study of the central business district is needed, treating, in so far as possible, its historical development. Other desirable information would include data: (1) on the character and extent of customer tributary areas; (2) on foot-frontage rentals, the growth and influence of chain stores and pedestrian traffic in the major outlying business centers and neighborhood business streets; and (3) on the factors explaining the restricted local importance of neighborhood business streets. These are only a few of the more important aspects of the business structure of Chicago still to be investigated in order to supply an adequate background for understanding its business functions and its manifold interrelations.

Public Utility Financing in the Fourth Quarter and the Year, 1936

By E. D. OSTRANDER*

A. The Fourth Quarter

TWO huge refunding issues, aggregating $335,000,000, by American Telephone and Telegraph Company were instrumental in boosting the volume of public utility security flotations to $769,219,700 for the fourth quarter of 1936. This sum represents a gain of 59.9% over the same period of 1935 and the highest quarterly volume since the second three months' period of 1930. A large part (93.6%) of the total was for refunding purposes, with the result that the volume of refunding financing during the fourth quarter of 1936 was the greatest of any quarter in the period 1919 to 1936 inclusive.[1] Undoubtedly one may safely assume that years prior to 1919 saw no comparable volume of refunding flotations in the public utility fields.

Forty-three issues comprised the fourth quarter's total flotations. Five of these were preferred stocks, but they contributed only $19,292,000 to the total. The 38 remaining issues were long-term debt obligations, none of which bore serial maturities. The 43 issues ranged in size from $150,000 to $175,000,000, with an average of $17,889,000 per issue and a median of $7,500,000.

Long-Term Debt Financing. The 38 issues in this category totaled $749,927,700, 97½% of the total volume for the period. Six of these issues, in the amount of $31,107,000[2] were sold privately to institutional investors. A summary and analysis of the remaining long-term debt issues are presented in Table I.

Of the 32 issues listed in Table I, 23 were those of electric or electric and gas companies, the majority of which are among the nation's outstanding operating utilities. Three of the five telephone issues were of first ranking quality. The four other issues were divided equally between gas and water companies. The high average quality of these various issues is revealed by the weighted averages shown in Table I. A comparison of these averages with corresponding measures for the three preceding quarters of 1936 is as follows:

Item	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Coupon rate	3.70%	3.82%	3.57%	3.48%
Offering price	101.09	100.69	102.13	102.04
Offering yield	3.64	3.78	3.46	3.37
Underwriters' commissions	2.25	2.26	2.18	2.06
Incidental expenses	0.58	0.91	0.84	0.54
Net proceeds	98.26	97.52	99.11	99.44
Cost	3.82	4.00	3.63	3.51

Although yields on high grade bonds declined throughout 1936, the trends revealed by the data above, while undoubtedly affected in some measure by the trend of market rates, cannot be taken as fully comparable measures of that decline. The reason, of course, is that the quarterly samples upon which the averages given above are based are not directly and completely comparable inasmuch as the securities floated from

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[1] December, 1936 set a similar record as regards the monthly volume.

[2] Exclusive of those portions of the two A.T. & T. Co. issues reserved for sale to Trustee of the Pension Fund.

TABLE I. SUMMARY AND ANALYSIS OF LONG-TERM DEBT ISSUES OFFERED PUBLICLY, FOURTH QUARTER, 1936

Company and Issue	Coupon Rate	Principal Amount	Maturity Date	Month of Offering	Offering Price*	Offering Yield	Underwriters' Commissions*	Proceeds to Company*	Estimated Incidental Expenses	Net Proceeds*	Cost to Company†
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
	%				%	%	%	%	%	%	%
American Tel. & Tel. Co.											
25-Year Debentures	3¼	$150,000,000	10- 1-61	Oct.	101	3.19	2	99	0.31	98.69	3.33
30-Year Debentures	3¼	140,000,000	12- 1-66	Dec.	102	3.15	2	100	0.23	99.77	3.26
Montana Power Co.											
First & Ref. Mtge.	3¾	48,000,000	12- 1-66	Nov.	101	3.69	2.25	98.75	0.59	98.16	3.85
Okla. Gas & Elec. Co.											
First Mtge.	3¾	35,000,000	12- 1-66	Dec.	102.50	3.61	2.50	100	0.60‡	99.40	3.78
Pacific Gas & Elec. Co.											
First & Ref. Mtge., Series I	3½	35,000,000	6- 1-66	Oct.	102.75	3.35	2	100.75	0.57	100.18	3.49
Houston Ltg. & Pr. Co.											
First Mtge.	3½	27,500,000	12- 1-66	Dec.	103	3.34	2	101	0.60	100.40	3.48
Ohio Edison Co.											
First Mtge.	3¾	26,834,000	1- 1-72	Dec.	103	3.60	2	101	0.47	100.53	3.72
Pacific Tel. & Tel. Co.											
Ref. Mtge., Series C	3¼	25,000,000	12- 1-66	Dec.	105	3.00	2	103	0.54	102.46	3.12
Cons. Gas, Elec. Lt. & Pr. Co., Baltimore											
First Ref., Series N	3¼	23,000,000	12- 1-71	Dec.	104	3.06	2	102	0.41	101.59	3.17
Conn. Lt. & Pr. Co.											
1st & Ref. Mtge., Series G	3¼	16,000,000	12- 1-66	Dec.	104	3.05	2	102	0.50	101.50	3.17
Southern Natural Gas Co.											
First Mtge. Pipe Line	4½	15,000,000	10- 1-51	Nov.	100	4.50	2.50	97.50	1.21	96.29	4.85
Central Maine Pr. Co.											
First & Gen. Mtge., Ser. H	3½	14,000,000	8- 1-66	Oct.	101.75	3.41	1.75	100	0.49	99.51	3.57
N. Y. St. Elec. & Gas Corp.											
First Mtge.	4	13,906,900	8- 1-65	Oct.	102	3.88	2	100	1.59	98.41	4.09
Consumers Power Co.											
First Mtge.	3¼	12,000,000	11- 1-66	Dec.	102.50	3.12	2	100.50	1.11	99.39	3.28
New England Pr. Co.											
First Mtge., Series A	3¼	10,067,000	11-15-61	Nov.	103.50	3.05	1.00	102.50	1.04	101.46	3.17
Florida Power Corp.											
First Mtge., Series C	4	10,000,000	12- 1-66	Dec.	100	4.00	2.50	97.50	1.41‡	96.09	4.23
Oklahoma Gas & Elec. Co.											
Debentures	4	9,500,000	12- 1-46	Dec.	100.50	3.94	2	98.50	0.60‡	97.90	4.26
Cumberland Co. Pr. & Lt. Co.											
First Mtge.	3½	9,500,000	10- 1-66	Oct.	103.25	3.33	1.75	101.50	0.62‡	100.88	3.45
Missouri Pr. & Lt. Co.											
First Mtge.	3¾	9,000,000	12- 1-66	Dec.	102	3.74	2.25	99.75	0.62‡	99.13	3.80
Conn. Lt. & Pr. Co.											
20-Year Debentures	3½	7,500,000	9- 1-56	Oct.	102	3.36	2	100	0.94‡	99.06	3.57
Penn. State Water Corp.											
First Coll. Trust	4¼	7,250,000	11- 1-66	Dec.	103	4.08	2.50	100.50	1.29	99.21	4.30
Conn. Lt. & Pr. Co.											
First & Ref. Mtge., Ser. F.	3½	7,000,000	9- 1-66	Oct.	105	3.24	2	103	0.94‡	102.06	3.39
Lake Superior Dist. Pr. Co.											
First Mtge., Series A	3½	5,600,000	10- 1-66	Oct.	101.75	3.41	2.25	99.50	0.92	98.58	3.58
Kansas Electric Pr. Co.											
First Mtge., Series A	3½	5,000,000	12- 1-66	Dec.	100	3.50	2.50	97.50	0.83	96.67	3.68
Florida Power Corp.											
Debentures	5	2,500,000	12- 1-46	Dec.	101	4.87	2.50	98.50	1.41‡	97.09	5.38
Montana-Dakota Util. Co.											
10-Year Conv. Debentures	4½	2,300,000	10- 1-46	Oct.	100	4.50	2.50	97.50	1.31	96.19	4.99
Ohio Associated Tel. Co.											
First Mtge.	4½	1,770,000	12- 1-66	Nov.	103	4.32	3	100	1.36	98.64	4.58
Shenango Valley Water Co.											
First Mtge., Series B	4	1,500,000	10- 1-61	Nov.	99.75	4.02	3	96.75	1.68	95.07	4.32
Tri-County Tel. Co.											
First Mtge., Series B	4½	1,500,000	4- 1-56	Oct.	102	4.35	3	99	1.51	97.49	4.70
Pub. Serv. Co. of N. H.											
First Mtge., Series F	3¼	1,400,000	12- 1-66	Dec.	101.50	3.17	0.74	100.76	0.90‡	99.86	3.26
Edison Sault Elec. Co.											
First Mtge., Series A	4½	1,042,800	10- 1-61	Dec.	101.50	4.40	3.25	98.25	2.74	95.51	4.81
Southeastern Ill. Gas Co.											
First Mtge.	5	150,000	7- 1-56	Dec.	97.50	5.21					
Weighted Averages	3.48				102.04	3.37	2.06	99.98	0.54	99.44	3.51
Totals§											

* Expressed in percent of principal amount as shown in Column (C).

† Computed on a bond yield basis using net proceeds per Column (K).

‡ Pro-rata share of total expenses on two issues offered by same prospectus.

§ Totals, which represent summation of actual amounts for individual issues, are: Principal Amount, $673,670,700; Offering Price, $687,396,445; Underwriters' Commissions, $13,898,678; Proceeds to Company, $673,497,767; Estimated Incidental Expenses, $3,605,592: Net Proceeds, $669,892,175.

Note: The weighted averages and the totals shown above are exclusive of the $150,000 Southeastern Illinois Gas Company bonds. This issue was not registered with the Securities and Exchange Commission inasmuch as it was offered for sale only to residents of Illinois. In view of the small size of the issue, its inclusion or exclusion has no appreciable effect on the averages.

quarter to quarter are, for the most part, those of different companies.

The offering yield of 3.00% on the Pacific Telephone and Telegraph Company bonds (see Table I) is a new low for that item. The previous low was 3.05% on the Potomac Electric Power Company issue in the second quarter. The net cost of 3.12% on the Pacific Telephone and Telegraph bonds is likewise a new low for that measure, although it is not significantly below the 3.13% on the Potomac issue. In fact, the difference is quite likely less than the probable margin of error in such calculations.

Exactly half of the 32 issues were offered at yields of 3.50% or less. The yield on seven offerings fell within the range of 3.51% to 4.00%, inclusive; seven others were from to 4.01% to 4.50%, inclusive, and two were in excess of 4.50%.

Issues Sold Privately. Although six issues were sold privately during the fourth quarter as against only four in the preceding period, the volume of such sales was less than half as much. The six issues were: $1,000,000 Battle Creek Gas Company first mortgage 3¾s of 1956; $5,745,000 Jamaica Water Supply Company 3¾s of 1961; $1,362,000 Queensborough Gas and Electric Company 3½s of 1961; $15,000,000 Rochester Gas and Electric Corporation 4s of 1960; $5,000,000 Rochester Telephone Company 3½s of 1961; and $3,000,000 Turners Falls Power and Electric Company 3¼s of 1966.

In addition, it may be noted that part of each of the two issues by the American Telephone and Telegraph Company was withheld for sale to the Trustee of the Pension Fund. Only those amounts publicly offered are included in Table I. Out of the October issue $25,000,000 was withheld for sale at 99 and $20,000,000 out of the December issue was so reserved for sale at 100.

Stock Financing. The five stock issues aggregating $19,292,000 accounted for about 2½% of the quarter's total volume of financing. These issues are listed as follows for record purposes: 70,300 shares of Central Hudson Gas and Electric Corporation 4½%, $100 par value preferred; 10,000 shares of Cumberland County Power and Light Company 5½%, $100 par value preferred; 15,000 shares of Missouri Power and Light Company $6, no par, preferred; 11,500 shares of Public Service Company of New Hampshire $5, no par, preferred; and 85,895 shares of Southern Indiana Gas and Electric Company 4.8%, $100 par value, preferred.

Two of these stock issues were used to replace other preferred series, but the three others were devoted to the retirement of bonds, bank loans, and other indebtedness, and to property additions.

Index Number of Volume

The index numbers[3] of volume of public utility financing for the fourth quarter and the year 1936 are as follows:

Period*	Total Capital	New Capital	Refunding Capital
October.....	176.40	4.19	919.95
November.....	51.43	5.84	248.28
December.....	241.22	27.16	1,165.49
Fourth Quarter...	156.35	12.40	777.91
Year, 1936...	108.00	7.74	540.89

* The bases for these index numbers are as follows: monthly average, 1926, equals 100 for the monthly series; quarterly average, 1926, equals 100 for the quarterly series; and the year's total for 1926 equals 100 for the annual series.

[3] For a description of the index and back figures through 1919 see "The Volume of Public Utility Financing, 1919-1935," 11 *Journal of Land & Public Utility Economics* 352-356 (November, 1935), 12 *Ibid.* 91-94 (February, 1936), 12 *Ibid.* 208-210 (May, 1936), 12 *Ibid.* 320-323 (August, 1936), and 12 *Ibid.* 431-433 (November, 1936).

B. Summary of 1936

Public utility security issues in 1936 rose to a total of $2,125,343,963, a gain of 66.9% over 1935, and the largest total for any year since 1930. This financing has been reviewed quarterly in preceding issues of the *Journal*[4] except that the fourth quarter of 1936 is the subject of Part A of the present study. A brief analysis of the year's financing and a comparison of the results with similar measures for 1935[5] are presented herewith.

The salient facts in regard to the volume of public utility security flotations during the past two years are set forth in Table II. Reference to this table reveals several interesting facts. It is readily apparent that long-term debt issues offered to the public constituted the bulk of the financing in both years. Although the use of serial issues was hardly significant in either year, it rose considerably in 1936, especially on the basis of number of issues; however, no serial issues were floated in the fourth quarter of 1936 and only one in the third quarter. The same number of issues were privately placed in both years (excluding from the count in 1936 portions of the two American Telephone and Telegraph Company issues; see footnotes to Table II), but the volume was materially greater in 1936. The data on exchange financing, that is, the direct placement of an issue with existing bondholders in exchange for outstanding issues, are not strictly comparable, but such financing was practically absent in 1936. This latter statement, of course, ignores the fact

[4] See references cited in footnote 2, *supra*.

[5] For a review of the year 1935, see 12 *Journal of Land & Public Utility Economics* 91-94 (February, 1936).

TABLE II. VOLUME OF PUBLIC UTILITY FINANCING, 1935 AND 1936

Item	1935		1936	
	Number of Issues	Amount	Number of Issues	Amount
Long-Term Debt:				
Publicly offered (exclusive of serial issues)	50	$1,055,883,400	93	$1,786,010,200
Serial issues	2	32,000,000	7	58,790,000
Total publicly offered	52	$1,087,883,400	100	$1,844,800,200
Privately placed	17	126,568,000	17	230,806,000*
Exchange issues	3	14,470,000	.....	†
Total Long-Term Debt	72	$1,228,921,400	117	$2,075,606,200
Short-Term Debt	1	$ 10,000,000‡	2	$ 1,850,000
Stocks:				
Preferred	3	21,626,946	11	47,887,763
Common or Capital	2	13,203,600	.....	.....
Total Stocks	5	34,830,546	11	47,887,763
Grand Total	78	$1,273,751,946	130	$2,125,343,963
Per cent for Refunding	.....	93.4%	.....	94.2%

* Includes $45,000,000 representing portions of the two American Telephone & Telegraph Company issues. The 17 issues, however, are exclusive of the two Telephone issues.

† In 1936, parts of some of the issues listed as public offerings were in fact offered directly to bondholders on an exchange basis.

‡ This issue was an extension of a maturity date.

that large institutional investors, such as insurance companies holding bonds called for redemption, constitute a logical market for the refunding issues.

Short-term debt issues were only of nominal importance in either year; in fact, none was issued during the last half of 1936. Stock financing in 1936 was confined to preferred series and, while the number of stock issues slightly more than doubled, the volume rose little more than one-third.

Inasmuch as long-term debt issues (excluding serial issues) offered to the public constitute such a predominant proportion of the total volume of financing, the analysis which follows is confined to the 93 issues in that category in 1936, together with appropriate comparison of the results with 1935.

The 93 long-term debt issues in 1936 ranged in size from $150,000 to $150,000,000,[6] with an average of $19,204,000 and a median of $10,067,000. In 1935 the range was from $500,000 to $73,000,000 with an average of $21,118,000 and a median of $16,000,000. An analysis of the distribution of the issues throughout the range in both years shows that, although there were a few issues of greater size in 1936, a larger percentage of all issues fell in the lower brackets than in 1935. The lower median and average are indicative of that fact, but it is more clearly revealed by the statement that, in 1936, 60.2% of all issues were under $15,000,000 in amount as compared with 42.0% in 1935.

In 1936 the weighted average cost of capital was 3.73% per annum against 4.01% in 1935. The weighted average coupon rate was 3.63% in 1936 and the corresponding figure for the offering yield was 3.55%. Other measures, based upon weighted average percentages of par value, of the financing in 1936 are given in the following tabulation, together with the comparative averages for 1935, where available:

Item	1936	1935
Offering price	101.47 %	.....
Underwriters' commissions	2.173	2.273%
Gross proceeds	99.298	.....
Incidental expense	0.691	0.690
Net proceeds	98.607	.....

These figures reveal a striking uniformity in the rate of incidental expenses and underwriters' commissions, especially the former.

C. *Principal Refunding Operations in 1935-1936*

During the past two years several companies have issued two or more refunding issues with the result that significant portions of their funded debt which was previously outstanding have been replaced. A few of these instances may be mentioned briefly.

American Telephone and Telegraph Company issued a total of $335,000,000 of 3¼% debentures as compared with funded debt of $440,943,600 on June 30, 1936, prior to the new financing. Proceeds from the new issues were devoted to retirement of three 5% issues totaling $332,849,900. This operation reduced annual interest charges by $5,745,995 (26.18%), equal to 30.8c per share on the 18,675,283 shares outstanding June 30, 1936. These savings will be reflected directly in net income since the Company charges all debt discount and expense and call premiums directly to surplus when incurred. Data are not available for an accurate estimate of savings based upon annual amortization of discount, expense, and call premiums but it may be estimated at roughly

[6] Represents that portion of the American Telephone and Telegraph Company issue offered to the public in October.

$4,000,000 per year. When these amounts of annual savings are multiplied by the term of the new bonds, it is apparent that total savings of well over $100,000,000 will accrue.

Consolidated Gas, Electric Light & Power Company of Baltimore has had four issues, including one in November of 1934, aggregating $58,766,000. The trends as to interest rates, yields, and costs on these four issues have been as follows:

Item	Series K	Series L	Series M	Series N
Amount (000 omitted)	$18,000	$10,440	$ 7,326	$23,000
When offered	Nov. 1934	April, 1935	July, 1935	Dec. 1936
Offering price	96%	100%	100%	104%
Coupon rate	3.75	3.75	3.50	3.25
Offering yield	3.96	3.75	3.50	3.06
Net Proceeds*	93.30	97.79	97.78	101.59
Cost	4.14	3.89	3.62	3.17

* Before duplicate interest.

The first three issues by this Company were sold privately to institutional investors and the fourth was publicly offered. Proceeds from this financing were used very largely for refunding $53,250,400 of earlier issues. All but $9,635,000 of the Company's funded debt (which stood at $62,385,400 on June 30, 1934) has been retired or refunded during the period.

Consumers Power Company has had four issues, beginning in June, 1935, and ending in December, 1936. The four offerings totaled $105,596,000, but the December, 1936 issue of $12,000,000 was used for new capital purposes rather than refunding. A total of $85,296,600 of bonds were refunded by the three other issues which were also in part used to provide new capital. Prior to the refunding program, the Company's funded debt was approximately $94,000,000.

The decline in interest rates during the period from July, 1935 to December, 1936 is shown by the fact that the first issue by this Company was sold to yield 3.75% and cost 3.93% contrasted with a yield of 3.12% and a cost of 3.28% on the last issue.

Ohio Edison Company has entirely replaced its funded debt which was outstanding as of September 30, 1935, by two refunding issues subsequent to that date in the total amount of $70,797,500 together with treasury funds of approximately $4,500,000.

Pacific Gas and Electric Company has brought out six new bond offerings during the past two years, more than any other company. These six issues totaled $250,000,000, an amount second only to American Telephone and Telegraph Company as regards volume of refunding operations. The proceeds from the new issues were used toward retirement of $252,980,000 of bonds of the Company and its subsidiaries. In the latter case the Company advanced proceeds from its issues to the subsidiaries on open account. As a result of these operations the Company has replaced a substantial portion of the consolidated funded debt which was about $294,000,000 before the first new issue was sold.

The trends of interest rates, commissions, expenses, and costs on the six issues by Pacific Gas and Electric Company present interesting comparisons. On the first four offerings the coupon rate was 4%, but for the next two it was dropped to 3¾% and finally to 3½% on the last issue. The yields at the offering prices were as follows, in chronological order: 4.00%, 3.77%, 3.88%, 3.60%, 3.60%, and 3.35%. Underwriters' commissions were 3% on the first issue, but only 2% on all others. Incidental expenses ranged from 0.66% to 0.45%, there being no significant downward trend over the period. The rate of net

proceeds and the cost thereof were as follows:

Month	Series	Principal Amount (000,000 omitted)	Net Proceeds*	Cost
March, 1935...	G	$45	96.34%	4.22%
June, 1935.....	G	30	101.49	3.91
Sept., 1935.....	G	20	99.55	4.03
March, 1936...	H	90	100.04	3.74
April, 1936.....	H	30	100.15	3.74
Oct., 1936.....	I	35	100.18	3.49

*Per cent of principal amount.

Several other companies sold two or more new bond issues during the past two years, and a few companies used a single issue to refund all or nearly all their previously outstanding long-term debt. The examples given above, however, illustrate the manner in which operating companies are taking advantage of existing interest rates to refund or realign their capital structures. In many instances substantial savings will accrue to stockholders, especially in the case of those companies which follow the policy of charging immediately to surplus the discounts, expenses, and call premiums on funded debt.

A Recent Effort to Improve Rate Regulation: Temporary Rate Orders in New York

By ROBERT W. HARBESON*

THE fair-value doctrine of the United States Supreme Court has resulted in administrative difficulties and shortcomings so serious as possibly to portend the general breakdown of the present system of rate regulation. In the prolonged and voluminous discussion centering around proper determination of value and rate of return for public utilities, agreement has been virtually unanimous on this point. The alternative courses which may be pursued in meeting this situation are: (1) enactment of the prudent-investment rule for determining the rate-base, provided the Supreme Court could be persuaded to accept it; (2) substantial replacement of private firms with government enterprise in public utility industries; (3) use of governmentally owned enterprises as "yardsticks," thus replacing regulation with direct competition; and (4) introduction of new administrative procedures which will increase public satisfaction with commission regulation by rendering it more expeditious and economical.

It seems clear that for the immediate future, at least, the choice must be between the latter two alternatives. Systematic use of competition as a substitute for regulation is regarded by many not only as an arrangement of very dubious economic merit but as a counsel of despair which "should be adopted only as a last resort after every other available remedy has been exhausted."[1] According to this point of view regulation has not broken down in principle however much it may have broken down in practice, and it can and should be made effective.

In this paper the possibilities of a recent development designed to improve commission regulatory procedure will be considered—namely, the device of temporary rate orders, which was provided for by law in New York in 1934,[2] and which has recently been upheld by the highest court of that State.[3]

Historical Background

In order to understand the development of the temporary rate order device in New York it is necessary to go back to two orders of the Public Service Commission of that State issued March 3, 1922, one applying to New York City and the other to other municipalities. After receiving a large amount of evidence but before completing hearings, the Commission directed the New York Telephone Company to reduce telephone rates temporarily pending final determination.[4] The Company promptly filed a bill with the district court for the Southern District of New York applying for an interlocutory injunction against enforcement of the reduced rates, on the ground that they were confiscatory and hence violated the Fourteenth Amendment. It was claimed that the rates in question would prevent the Company from earning more than 2.56% on the cost of its property used in intrastate

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[1] Mosher and Crawford, *Public Utility Regulation* (New York: Harper and Bros., 1933), p. 508.

[2] Public Service Commission Law, §114, c. 287, Laws of 1934. See also Winthrop Palmer, "New York Utility Legislation in 1934," 23 *National Municipal Review* 594 ff. (November, 1934).

[3] *Re Application of Bronx Gas & Elec. Co. v. Milo R. Maltbie et al.*, and *Re Application of Yonkers Elec. Light & Power Co. v. Milo R. Maltbie et al.*, 14 P.U.R. (NS) 337.

[4] *Re New York Telephone Co.*, P.U.R. 1922 D 18.

service, and 1.96% on its fair value. The injunction was granted pending final hearings and until further order by the court. The Company was required to file bond for $6,000,000 to secure repayment to subscribers of all excess charges paid pending the suit in the event that the injunction should thereafter be dissolved. Thereupon the Commission appealed directly to the Supreme Court of the United States.

In *Prendergast* v. *New York Telephone Co.*, decided April 16, 1923,[5] the Supreme Court sustained the injunction granted by the lower court. After pointing out that it was not necessary for the Company to apply to the Commission for a rehearing before applying for an injunction, inasmuch as the law did not require that an application for a rehearing be made and its granting was entirely within the discretion of the Commission, Mr. Justice Sanford stated the Court's position in the matter as follows:

"Nor did the fact that the orders of the Commission merely prescribed temporary rates to be effective until its final determination, deprive the Company of its right to relief at the hands of the court. The order required the new reduced rates to be put into effect on a given date. *They were final legislative acts as to the period during which they should remain in effect pending the final determination*; and *if the rates prescribed were confiscatory the Company would be deprived of a reasonable return upon its property during such period, without remedy, unless their enforcement should be enjoined.* Upon a showing that such reduced rates were confiscatory the Company was entitled to have their enforcement enjoined pending the continuance and completion of the rate-making process. If the Commission, however, had fixed an early date for the final hearing, this might have been taken into consideration by the court as an element affecting the exercise of its discretion in the matter of granting an interlocutory injunction. [Case cited.] But, in the present case, the Commission was still continuing indefinitely its general investigation, and had not fixed any date for the final hearing. . . .
The Company, meanwhile, could only be protected from loss by injunction; while, on the other hand, its subscribers were protected by the bond which was required for the return of the excess charges collected if the injunction should be thereafter dissolved. There was no necessity in the particular situation presented for any test period of the new rates."[6]

As a result of this decision the New York Legislature was confronted with the question whether a way could be found to compel public service corporations to charge reasonable rates pending the usually long-drawn-out proceedings, extending into months and years, which were necessary to establish a fair return. Apparently with this problem in mind, the Legislature in 1934, by Chapter 287 of the laws of that year, added Section 114 to the Public Service Commission Law.[7] This section is concerned

[5] 262 U. S. 43.

[6] *Ibid.*, at 49-51. Italics mine. Temporary rate reductions were voided for similar reasons in *Indiana General Service Co. v. McCardle*, 1 Fed. Supp. 113, 115 (S.D. Ind. 1932), and *New York Edison Co. v. Maltbie*, 270 N. Y. Supp. 409, 416 (Sup. Ct., 1934), affirmed 244 App. Div. 436, 279 N. Y. Supp. 949 (3rd Dept. 1935).

[7] Provisions for temporary rate orders exist in the statutes of a number of states, but so far as the writer is aware, none of them are closely similar to the New York law. The idea of recoupment for deficient earnings under temporary rates is said to have originated in Illinois (Ill. State Bar Stats. (1935), c. 111a, §51). Only one order appears to have been made under this law (*Ill. Com. Com. v. Public Serv. Co. of N. Ill.*, 4 P. U. R. (NS) 1 (1934)) and has not been tested in the courts. It differs from the New York law in three respects. First, it does not specifically direct the fixing of temporary rates on the basis of original cost, and hence could be construed to require the computation of all factors necessary for fixing a final rate. Second, the Illinois Commission is required to find that an emergency exists before issuing temporary rate orders. Third, the duration of temporary rate orders in Illinois is limited to one year. Other provisions for temporary rate orders may be found in Ind. Ann. Stats. (Burns, 1926), §12795; in Wis. Stats. 1931, § 196.70; Va. Code (Michie Supp. 1934), § 4071-a; and Ohio Ann. Code (Page, 1926), § 614–32.

In some cases recoupment for deficient earnings has been sanctioned even in the absence of a statute. See *Omaha and Council Bluffs Ry. Co. v. Nebraska City Ry. Com.*, 103 Neb. 695, 697 (1919); *Petersburg Gas Co.*

(Footnote 7 continued on page 80)

with temporary rates and reads as follows:

"114. Temporary rates. To facilitate prompt action by the commission in proceedings involving the reasonableness of the rates of any public utility and to avoid delay in any such rate proceeding, *the commission is hereby authorized to require any public utility company to establish, provide and maintain continuing property records*, including a list or inventory of all the physical property actually used in the public service, and to require any public utility company to keep its books, accounts and records in such manner as to show currently the original cost of said physical property and the reserves accumulated to provide for the retirement or replacement of said physical property.

"The commission may in any such proceeding, brought either on its own motion or upon complaint, upon notice and after hearing, if it be of opinion that the public interest so requires, immediately fix, determine and prescribe, temporary rates to be charged by said utility company pending the final determination of said rate proceeding. *Said temporary rates so fixed, determined and prescribed shall be sufficient to provide a return of not less than five per centum upon the original cost, less accrued depreciation, of the physical property of said public utility company used and useful in the public service*, and if the duly certified reports of said utility company to the commission do not show the original cost, less accrued depreciation, of said property, the commission may estimate said cost less depreciation and fix, determine and prescribe rates as hereinbefore provided.

"Temporary rates so fixed, determined and prescribed under this section shall be effective until the rates to be charged, received and collected by said utility company shall finally have been fixed, determined and prescribed. The commission is hereby *authorized* in any proceeding in which temporary rates are fixed, determined and prescribed under this section, to consider the effect of such rates in fixing, determining and prescribing rates to be thereafter charged and collected by said utility company on final determination of the rate proceeding." (Italics mine.)

The new section was promptly tested in the courts and its judicial history must next be reviewed. The first companies to test the new section were the Bronx Gas and Electric Company and the Yonkers Electric Light and Power Company; the cases brought by the two companies were argued together in the state courts since they presented the same question of law.[8] On May 2, 1934 the Public Service Commission of New York, on its own motion, instituted an investigation of the electric rates charged by the Bronx Company, and on October 16, 1934 ordered the Company to put into effect not later than November 1, 1934 temporary rates which reduced by 20% all charges for metered electric service to general consumers.[9] Similar

(Footnote 7 continued from page 79)

v. City of Petersburg, 132 Va. 82, 106 (1922); *Columbus Gas and Light Co. v. Pub. Serv. Com.*, 193 Ind. 399, 403 (1923).

In the period of rapidly rising prices during and after the World War valuation procedure was discarded in some cases in order that there might be prompt action to maintain the solvency of utility companies and to enable them to continue to provide proper service. See for example *Kansas City v. Pub. Serv. Com.*, 276 Mo. 539 (1918); *Re City Light & Traction Co.*, P.U.R. 1918 F. 938; *Omaha and Council Bluffs Ry. Co. v. Nebraska City Ry. Co., supra; Re Pacific Electric Co.*, P.U.R. 1919 B 1; *Chicago Rys. v. Chicago*, 292 Ill. 190 (1920); *Muskogee Gas & Electric Co. v. State*, 81 Okla. 176 (1920); *La Crosse v. State R. R. Com.*, 172 Wis. 233 (1921). During the first post-war depression and also the recent depression use of similar methods in making emergency rate reductions was upheld in some cases and rejected in others. Examples of emergency reductions, made without the usual valuation procedure, which were upheld are *Oklahoma Gas and Elec. Co. v. Corporation Com.*, 83 Okla. 281 (1921); *Cumberland Tel. and Tel. Co. v. Louisiana Pub. Serv. Com.*, 283 Fed. 215 (E.D. La., 1922); *Kings County Lighting Co. v. Malthie*, 271 N.Y. Supp. 644 (Sup. Ct., 1933); *Gehrke v. Interstate Light & Power Co.*, P.U.R 1933 C 154. For examples of reductions made in a similar way which were rejected, see cases cited in footnote 6.

[8] For discussion of the Bronx and Yonkers cases see 36 *Columbia Law Review* 1177-78 (November, 1936) and 31 *Illinois Law Review* 404-6 (November, 1936). On temporary rates generally see W. A. Prendergast, "The Economic Emergency as a Factor in Rate Making, An Analysis of the Wisconsin Telephone Order," 10 *Public Utilities Fortnightly* 243 (September 1, 1932); and J. C. Swidler, "The Legal Status of Temporary Rates," 12 *Ibid.* 136–42, 202–6 (August 3 and 17, 1933); Elmer A. Smith, "Emergency Rates and Due Process," 14 *Ibid.* 624–35 (November 8, 1934); and "Temporary Utility Rates," Comment, 46 *Yale Law Journal* 505–18 (January, 1937).

[9] *Re Bronx Gas & Elec. Co.*, 6 P.U.R. (NS) 198.

proceedings had been instituted against the Yonkers Company on October 11, 1932. On May 9, 1934 the Corporation Counsel of Yonkers moved the Commission to fix temporary rates under Section 114, and this was ordered October 23, 1934, the existing schedule of rates being reduced by 6%.[10] In both cases the temporary rates were estimated to be sufficient to allow a return in excess of 6% on the original cost of the physical property of the companies, less accrued depreciation. Using the fair-value figures claimed by the companies, the return would be 4.84% for the Bronx Company and 4.89% for the Yonkers Company.

The New York Supreme Court granted the Bronx and Yonkers companies injunctions on November 26, 1934, and at the same time required the companies to file bonds to protect their customers from overcharges should the Commission finally be upheld.[11] The injunctions were granted on the ground that the fixing of a temporary rate did not eliminate the irreparability of damage that may be suffered as a result of a reduction in rates thus decreed; that Section 114 authorized the Commission to correct errors but did not command it to do so; and that "such authority can be more effectively exercised after a thorough review and establishment by judicial rule of the effect of the section and what constitutes a lawful exercise of the powers of the Commission thereunder."[12] The court recognized, however, that Section 114 had a salutary purpose, in that it sought to hasten the day of relief to consumers subject to unreasonable rates and to avoid delays in handling slow-moving rate cases.

The Appellate Division on November 13, 1935, by a vote of three to two, annulled the Commission's orders in the two cases in question and held that Section 114 was unconstitutional.[13] The majority laid some stress on the provision of Section 114 which authorized the Commission to consider the returns yielded by temporary rates in fixing final rates. On this point Presiding Justice Hill, speaking for the Court, said:

> "It is argued that this sentence permits the Commission, by fixing permanent rates above current requirements, to compensate the companies if an adequate and reasonable return was not earned under the temporary rates. I do not adopt the construction urged. The sentence is more susceptible of a construction that the Commission may consider as evidence the experiences under the temporary rate in fixing a permanent rate that will be compensatory in the future without regard to past losses."[14]

But, even if the construction of this provision urged by the Commission be accepted, the majority felt that certain earlier decisions by the federal courts clearly established the unconstitutionality of this section of the law. The first of these cases was *Love* v. *Atchison, Topeka and Santa Fe R. R. Co.*,[15] decided in 1911, in which a federal circuit court held that it was as clear a violation of the Constitution "to take the property of a railroad company without just compensation by the enforced operation of tentative rates during the process of their making as by the operation of final rates after that process is complete," and that injunctions may prop-

[10] *Re Yonkers Elec. Light & Power Co.*, 6 P.U.R. (NS) 132.

[11] *Bronx Gas & Elec. Co. v. Milo R. Maltbie et al.*, 6 P.U.R. (NS) 337; *Yonkers Elec. Light & Power Co. v. Milo R. Maltbie et al.*, 6 P.U.R. (N. S.) 341.

[12] *Bronx Gas & Elec. Co. v. Milo R. Maltbie et al., op. cit.*, at p. 340.

[13] *Yonkers Elec. Light & Power Co. v. Milo R. Maltbie et al.*, 12 P.U.R. (NS) 26.

[14] *Ibid.*, p. 28.

[15] 107 C.C.A. 403, 185 Fed. 321 (1911).

erly be secured against such tentative rates.[16] The second case referred to was likewise a lower federal court case, *Springfield Gas and Electric Co.* v. *Barker*,[17] decided in 1915, in which it was pointed out, in connection with making up deficiencies in temporary rates by increases in final rates, that "consumers of electricity are constantly changing, and that additional charges could scarcely be enforced against those who had not enjoyed the lower rate."[18] The third, and final, case referred to was *Oklahoma Natural Gas Co.* v. *Russell*,[19] decided by the United States Supreme Court in 1923. The issue was the right of the United States District Court to grant an injunction pending an appeal from the Oklahoma Corporation Commission to the Oklahoma Supreme Court. In upholding the right of the District Court to grant the injunction, the United States Supreme Court, citing the two foregoing cases, said:

"If the supreme court of the state hereafter shall change the rate, even nunc pro tunc, the plaintiffs will have no adequate remedy for what they may have lost before the court shall have acted."[20]

Justice Heffernan wrote a dissenting opinion in which Justice Bliss joined. He held that the proceeding in question differed from the New York Telephone case in that there was need for a test period for the new rates and the Company was amply protected against loss from the temporary rates under Section 114. He contended also that money paid for use of a utility's property or paid for property taken by eminent domain did not need to be paid at once, and that "as long as a utility is assured, under the law, of obtaining a reasonable rate of return on the value of its property either now or in the reasonably immediate future for the entire period of its use, there can be no confiscation."[21] The possibility of some consumers being prejudiced by the fixing of either temporary or final rates was dismissed with the comment that no one could question the validity of a law unless he demonstrated that some right of his was infringed. While it was admitted that the language of the statute was permissive and not mandatory, the dissenting justices felt that the petitioner was "unduly apprehensive that the Commission may abuse its power" and that it was not the province of the Court

"to pronounce anticipatory judgments or to assume in advance that the Commission will disregard its plain duty. If the Commission should fail to consider the effect of the temporary rates in making its final determination, it will be time enough for petitioner to ask the Court to intervene. The mere fact that the language of the statute is permissive rather than mandatory does not warrant its condemnation as unconstitutional."[22]

The Court of Appeals on July 8, 1936 by a vote of six to one reversed the Appellate Division and upheld the Commission.[23] The views of the Court were summarized by Chief Justice Crane in the following words:

"We cannot imagine the Legislature, in the face of the *Prendergast* case, doing such a foolish thing as reenacting, though in different language, a law giving the Public Service Commission power to do that which the United States Supreme Court had determined it could not do. The Legislature, evidently by section 114, intended to meet the criticism in the *Prendergast* case and to

[16] *Ibid.*, p. 327.
[17] 231 Fed. 331 (1915).
[18] *Ibid.*, p. 335.
[19] 261 U.S. 290 (1923).
[20] *Ibid.*, p. 293.
[21] *Yonkers Elec. Light & Power Co. v. Milo R. Maltbie et al.*, *supra* n. 13, at p. 37.
[22] *Ibid.*, p. 39.
[23] *Re Application of Bronx Gas & Elec. Co. v. Milo R. Maltbie et al.*, and *Re Application of Yonkers Elec. Light & Power Co. v. Milo R. Maltbie et al.*, 14 P.U.R. (NS) 337, *supra* n. 3.

follow the way impliedly pointed out, for a proper law. If the courts required the public utility company to put up a bond to pay back the consumers the overcharges which it has exacted, pending a hearing, why was it not just as feasible and legal to turn the remedy about to provide that the consumers or the public should make good to the company the loss which it may have sustained in temporarily exacting too little? This is what our Legislature has done, and this we think is the meaning which we must give to its language, if it is to have any sense at all in the light of the past. . . .

"True it is that all the consumers paying the final rate, including the take-up, may not be the same as those who paid the temporary rate. A few consumers may be new customers paying what the old consumers should have paid. Such instances are of minor importance; the percentage must be very small. We can never work out institutions of government if we refine matters to such an extent that we have to consider all these little details. The Constitution expresses fundamental principles, and if in the main these have been observed, this is all that can be required. Besides, when we speak of the consumer—the customer—we mean the public, not individuals (*San Diego Land and Town* v. *Jasper*, 189 U. S. 439)."[24]

Evaluation of the Temporary Rate Order Device

In evaluating the temporary rate order device, three important merits stand out. First, it greatly reduces such incentive as the companies may have to protract rate proceedings by delays and obstructive tactics, in order to continue in effect as long as possible rates which might subsequently be found to be unreasonable. It is well known that the fair-value requirements of the Supreme Court, in which reproduction cost is an important element, have greatly facilitated such tactics. This is an important consideration in view of decisions by the Supreme Court holding that earnings realized under rates established by commissions become the property of the companies, and that even if such earnings were unduly liberal they could not be used as a basis for reducing rates to a level which would not permit the earning of a fair return in the future. For example, in *Newton* v. *Consolidated Gas Co.*, the Court said:

"Since 1907 the Gas Company has been subject to supervision by a Commission empowered to prohibit unreasonable rates and the presumption is that any profits from its business were lawfully acquired. . . . Mere past success could not support a demand that it continue to operate indefinitely at a loss."[25]

And in *Public Utility Commissioners of New Jersey* v. *New York Telephone Co.*, it said:

"The law does not require the company to give up for the benefit of future subscribers any part of its accumulations from past operations. Profits of the past cannot be used to sustain confiscatory rates for the future."[26]

Under the temporary rate order arrangement consumers are protected during the course of rate proceedings by paying rates which yield only a modest return on the companies' original cost less accrued depreciation, and the latter would have much less to gain by failing to cooperate promptly and fully with the Commission in establishing the fair value upon which the final rates would yield a fair return. Even where original cost less depreciation promised to be greater than final fair value, the temporary rate order device would tend to minimize delays. The result is more adequate protection of consumers and greater expedition and economy in rate cases. At the same time the companies are assured a fair return on the average for the entire period covered by the temporary and final rates.

The second important merit of the

[24] *Ibid.*, p. 342.

[25] 258 U.S. 165 (1922), at p. 175.

[26] 271 U.S. 23 (1926), at p. 32.

arrangement under consideration is that it facilitates and encourages initiation of rate orders by the New York Commission, thus making it less often necessary for municipalities or organizations of consumers to undertake protracted and expensive proceedings. It is far more economical for a commission than for the latter interests to undertake such tasks. Moreover, one of the primary functions of a commission is to represent and defend the public on its own initiative. Commission regulation has been rightfully criticized as tending to become too predominantly quasi-judicial in character, in which the main task becomes the granting or denial of applications of various sorts from utility companies or the deciding of disputed issues submitted by interested parties.[27] Probably one main reason for this tendency is the tremendous quantity of such work and a general condition of understaffing and underfinancing among commissions, which severely limits the number of proceedings instituted on the initiative of these bodies. Unless the interests affected are able and willing to go to heavy expense in litigating their complaints, the matters complained of will not in a majority of instances be investigated and, where necessary, remedied. The device of temporary rate orders, by reducing the time and expense involved in initiating rate cases, will help to improve this situation and will also be welcomed by those utilities which desire speedy action in order to reduce expense of litigation.

One result of these limitations on the instituting of formal rate cases has been the policy adopted by several commissions of entering into negotiations and compromise agreements with companies, whereby rate reductions may be obtained. Although the New York Commission is among the most fortunately situated with respect to adequacy of staff and appropriations, Chairman Maltbie was quoted as having said in 1931 that his Commission had adopted negotiation as a definite policy because of the saving in time and expense which it afforded, and that by the beginning of 1932 over ¾ of the consumers of electricity in New York State would be under "negotiated" rates.[28] The danger involved in such a policy is well stated by Mosher and Crawford as follows:

> "The adoption of this policy is equivalent to raising the white flag of surrender in this important phase of regulation, for in such negotiations the companies hold most of the trump cards. If this tendency becomes a general policy, the conclusion is warranted that the attitude of the Supreme Court on utility valuation has led to the annulment of the mandate to allow utility companies a fair return on a fair value. For without an understanding and agreement as to value, rate determination becomes a process of 'higgling'."[29]

A third merit of the law is the authority given the Commission to require public utilities to maintain continuing property records, including an inventory of all physical property actually used in the public service, and to keep accounts and records in such manner as to show currently the original cost of such property and the reserves accumulated to provide for retirement or replacement thereof. Not only does this provision enable prompt issuance of temporary rate orders but also it may materially reduce the time required for finding reproduction cost and hence may reduce the time required for issuance of final rate orders. This latter

[27] Mosher and Crawford, *op. cit.*, pp. 34-40.

[28] *Ibid.*, p. 191n. For Chairman Maltbie's defense of this policy see *Washington Heights Taxpayers Assn. v. New York Edison Co.*, P.U.R. 1932 E 218, at pp. 232-36.

It should be noted that the threat of issuance of a temporary rate order may be used to strengthen the Commission's bargaining position in rate negotiations.

[29] *Ibid.*, pp. 191-92.

possibility should not be stressed too much, however, because the law has not yet been sufficiently tested. It should also be noted that this provision of the law will make it difficult for utility companies to hinder prompt issuance of temporary rate orders by efforts to obscure original cost.

On the other hand, the temporary rate order device involves certain difficulties, altogether apart from the question of its constitutionality. First of all, some consumers would be obliged to pay the final rate without having had the benefit of the temporary rate. If the latter yielded less than a fair return upon fair value as ultimately determined, the final rate would, of course, have to be high enough to yield more than a current fair return, in order to enable the company to earn a fair return on the average for the whole period covered by temporary and final rates. Hence those consumers who paid only the rates finally fixed would be disadvantaged. Conceivably, also, the temporary rates might be higher than the final rates, in which case those consumers who paid only the temporary rates would be disadvantaged. As the Court of Appeals indicated, however, consumers injured in either of these ways would probably constitute a very small minority of the total number, and it would therefore seem that this difficulty may properly be regarded as of subordinate importance.

A second objection which might be raised is that, conceivably at least, some cases might arise where a company after having operated under reduced temporary rates would find it impossible to increase its income sufficiently, under any final rates which might be fixed and even if given a free hand by the Commission, to secure a fair return on the average for the whole period covered by the temporary and final rates. This problem might confront companies faced with a declining market for their services, by reason of competition, the decline of the communities served, or similar circumstances. But it is not likely that the Commission would initiate an important rate case against a company thus situated, and in any event it could minimize the possibility of hardship by fixing temporary rates at a generous level.[30]

A third objection relates not to the soundness of the temporary rate order principle but to the phraseology of the New York law. It will be recalled that under Section 114 the Commission is merely "authorized" to "consider" the effect of temporary rates in fixing final rates. While the Court of Appeals was probably correct in holding that, in view of the antecedents of the law, the Legislature must have intended that the Commission should consider it obligatory to fix rates which would insure a fair return on the average for the whole period covered by temporary and final rates, it does not seem that such a meaning is conveyed by an ordinary interpretation of the words of the statute. In order to establish certainty regarding the legislative intent, the law should have *directed* the Commission to adjust rates in the manner just indicated.

A fourth possible objection is that the issuance of temporary rate orders might encourage the Commission to delay un-

[30] On this point note the following:

"One exception might be noted: Where the highest permanent rate which the traffic will bear is not significantly greater than the reasonable rate, the utility runs the risk that the losses resulting from inadequate temporary rates can never be recouped. It is reasonable to suppose that in such special cases the courts would not place the risk on the utility. Many street railway systems appear to be operating under such conditions." Comment in 31 *Illinois Law Review* 405-6n. (November, 1936).

duly in determining final fair value and fixing final rates. Unless it could be shown that the Commission failed to act in good faith, however, it probably would not be wise to fix a definite and restricted limit for duration of temporary rates. No contention of bad faith was made in the Bronx and Yonkers cases despite the lapse of nearly two years between issuance of the original orders and the decision of the Court of Appeals.

In the event that the constitutionality of the law should be tested in the United States Supreme Court (which seems unlikely at present) the ground for doubt concerning the possibility of a favorable outcome is the apparent insistence of the Court in *Newton* v. *Consolidated Gas Co.*, [31] *Public Utility Commissioners of New Jersey* v. *New York Telephone Co.*,[32] and other cases, that in judging fairness of return each year is to be considered separately. Nevertheless, the writer is of the opinion that neither these cases nor those referred to by the majority of the Appellate Division point conclusively to an unfavorable outcome. Assuming that the interpretation of the Court of Appeals as to the legislative intent is correct, the situation of the companies under the New York law differs from that in the other cases, in that they are protected from loss, as measured by the amount by which their earnings under temporary rates fall short of a fair return on the fair value as finally determined. Hence, there would seem to be grave doubt whether the cases referred to properly constitute a decisive precedent for rejection of the law in question. Economically and administratively the law has much to commend it, assuming that the difficulties discussed above can be minimized, and final approval of it by the courts would constitute a material service to the cause of commission regulation.

[31] *Supra*, n. 25.

[32] *Supra*, n. 26. See also Jones and Bigham, *Principles of Public Utilities* (New York: Macmillan, 1931), pp. 262-63

Urban Land Department

MORTON BODFISH, *Editor*

Why No Fair Analysis of a Low-Rent Housing Program?

READERS of the November, 1936 issue of this *Journal* may recognize some resemblance of this title to the title of the leading article in that volume. Criticizing the various aspects of government activity in housing has become a favorite American indoor sport during the past few years. Dr. Fleischmann in the article mentioned above joins in the sport but creates the impression of sketching a desirable program to supplant the one whose existence he questions.

A very brief review of certain inconsistencies, misstatements, and questionable theories presented in the article may assist readers of the *Journal* who are seeking to achieve some comprehensive understanding of housing problems or possibilities in the United States. The article ignores some of the basic reasons for the absence of a real housing program such as, lack of intelligent public opinion and the importance of the emergency motivations that have shaped government housing activities. Instead, he chooses to criticize many policies that have never been accepted as suitable for a permanent program by any large, influential group.

Dr. Fleischmann defines a housing program as meaning the provision on a non-profit basis of communities of homes to be owned by the same body and rented to occupants. Obviously, his program would exclude consideration of limited-profit developments, certain types of justifiable home ownership, and possibly subsidized housing, although he invalidates his definition by discussing some of these types of housing later.

Partial exemption from real estate taxes is advocated as a desirable form of subsidy. This suggestion is made with apparent disregard of the inequity which results from use of real estate taxation to distribute a burden in proportion to the ability to pay. He fails to recognize tax exemption as an undesirable but necessary substitute for other forms of local subsidy. It seems fair to question use of the term economic rent when it is applied to a rent that is subsidized to the extent of $1.44 per month by exemption from taxes on buildings. He advocates the use of tax exemption subsidy to lower rents and then advocates keeping rentals in limited-dividend projects not too far below rents in commercial projects in order to avoid the unpleasant and, what seems to him, impractical device of tenant selection.

Dr. Fleischmann points out methods of reducing rents. One would infer that he considers low rents desirable were it not for his immediate intimation that low rents have "dangerous consequences." Passing too easily over the question of land acquisition and the relative merits of central or individual methods of supplying heat or other utilities, he presents the customary solution; the $2,500 house (including land) and "perhaps" not even tax exemption. Next the dream of rapid decentralization of industry to areas where cheap housing is possible is held forth. The United States Chamber of Commerce, it is hoped, will assist in luring population and industry away from large cities to less urban locations. Some of the essential controls such as real zoning, taxation, and public land ownership are not mentioned.

His discussion of subsidies indicates his belief that the "social housing advocates" have insisted upon an outright capital grant as the only kind of subsidy. It is difficult to find any substantiation for this attitude, even assuming that the "social housing advocates" could be defined. His recommendation of rent subsidies does not include a description of the very close and continuous check on both economic status and place of residence that would be necessary when the subsidy is granted directly to tenants rather than attached to given projects. Dislike of detailed investigation of the tenant's home life and economic circumstances voiced elsewhere apparently does not deter recommendation of a system of rent subsidy predicated upon such investigation.

The logic which condemns outright grants as a device for lowering rents in housing

projects on vacant land and advocates them to lower rents in housing projects involving slum clearance is difficult to understand. Furthermore, the author would deny federal financial assistance to cities for the achievement of their most difficult and expensive task—slum clearance.

It pleases the author to describe as "frills" the few community facilities that have been included in public housing projects only after a very careful consideration of cost. A closer examination of current English practice and thought would reveal a general opinion among responsible officials that the "frills" should have been provided more extensively than they were in the past English program. The frequent notes of ridicule for social workers or socially minded housing officials make one wonder whether Dr. Fleischmann has a clear enough concept of the interrelation of social and financial factors to qualify as a general critic of the housing scene.

Limitations of point of view expressed in the article are well represented by the author's discussion of federal as compared to local participation. He says, "But even in places where conditions for low-rent housing are ideal, there will not be much local initiation." Later, after inferring that creditable municipal housing activity (even through housing authorities) is impossible, he says, "How much more absurd is the idea that the Federal Government has to build housing developments throughout the country, renting dwellings, collecting rentals!"

One can do little more than hope that Dr. Fleischmann's narrow evaluation of less than four years of American housing experience will not be considered by readers of the *Journal* to be indicative either of the value of past experiences or of the possibilities of the future.

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Opportunities for City Planning Suggested by Mr. Delano's "Tentative Program"

ONE of the most interesting recent proposals in the field of housing and city planning is that submitted in December to the Central Housing Committee by Mr. Frederic A. Delano, its Chairman. The proposal met with enthusiasm, and the Committee authorized its publication.

Mr. Delano, in his discussion of certain planning aspects of the housing of low-income groups, points to various needs and deficiencies which have been thrown into prominence during the depression. The Federal Government, with the assistance of state and local governments, has attempted to meet emergency needs with its vast program of relief. Only to a limited degree, however, has it been concerned in assisting the communities with long-term development programs for the future.

Mr. Delano points out a number of ways in which the Federal Government can and should assist the cities. He suggests expansion of the Bureau of Standards to provide technical research looking toward the provision of sound houses at a cost low enough to make them available to millions of families who are now forced to live in substandard housing, unfit for human use.

"One of the principal functions of the federal government," Mr. Delano says, "should be the encouragement of private enterprise in this field." The value to private enterprise of a government housing program is well known from the experience of England where over three million houses have been built since the war, chiefly by private enterprise. English prosperity and the high degree of industrial activity of recent years is widely ascribed to extensive government activity in the building of dwellings for the low-income groups.

Communities would benefit greatly from acting upon the suggestion of Mr. Delano that "a special effort should be made to demonstrate the economy of neighborhood planning."

The physical planning and economic studies made by the New Jersey State Planning Board of one square mile in a New Jersey city point out the immense savings in capital and operating costs which follow from proper neighborhood planning. The New Jersey study indicates a $400,000 saving in street improvements alone.

Whether or not the Federal Government should actually provide houses, or the extent

to which such provision is practicable or wise, is still a controversial question, but many already believe with Mr. Delano—and the number is steadily growing—that federal action should be looked to for enlisting the cooperation of private enterprise and local governments in a program for meeting the widespread housing need.

That the local communities are also aware to a considerable extent of their housing needs is manifested by the recent creation of authorities throughout the United States. One indication of the extent of interest in the housing problem is the establishment of a housing committee by the United States Chamber of Commerce. Another is the quantity and the prominence of housing discussion in real estate and banking journals.

Mr. Delano suggests federal grants-in-aid to cities for land acquisition over a period of years as the basic need. The grants would be made contingent on the application by the communities of sound planning practices. Land so acquired need not be built on immediately, but might be acquired as good bargains come to the attention of local officials and held for future use. Subsidy for land acquisition need not and should not preclude the Federal Government's granting additional assistance for construction purposes.

The Federal Government could in this way provide direct and effective assistance to communities in establishing satisfactory standards for low-cost housing, and would also be enabled to encourage communities to provide themselves with the means to survey adequately and to plan the development of their physical areas along the lines of sound community planning principles.

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Land Resources Department

GEORGE S. WEHRWEIN, *Editor*

Farm Tenancy: Report of the Arkansas State Policy Committee

THE focal point of national interest in the evils of the plantation system of the South has been directed to eastern Arkansas. This has resulted not because conditions there are less tenable than elsewhere, but because of happenings, more or less accidental, which have drawn public attention to that area. Although many of the occurrences in this area are to be regretted, they may prove fortunate because they have focussed the public and political mind upon farm tenancy as a social problem.

Seeking to present the farm tenancy situation in Arkansas in such a way as to develop enlightened public opinion, the Arkansas State Policy Committee appointed a sub-committee early in the summer of 1936 to prepare a report on the subject.[1] The report contains not only a general analysis of the farm tenancy situation but makes specific recommendations for action to alleviate the evils of tenancy.

Although ostensibly a report on agricultural labor, the discussion soon turns to farm tenancy and continues on that subject to the end. After discussing the effect of a high birth rate, increased mechanization on farms, and the "back-to-the-land" movement in bringing about a surplus of farm labor in the rural areas of Arkansas, the Committee holds that "the tenure of land has a very important bearing on the farm labor situation" (p. 9).

"Tenancy is on the increase in Arkansas. In 1880, over 69 per cent of all the farms were operated by owners, whereas by 1930, almost the opposite position existed when 63 per cent of the farmers were tenants. There has been a decrease of three per cent in tenancy since 1930.

"Tenancy should not be associated entirely with the plantation areas as it prevails in every nook and corner of the state. Out of 151,759 tenants in the state in 1935, approximately 58,651 or 38.6 per cent lived in the upland section" (p. 11).

Although the sub-committee evidently recognizes that the entire State is not characterized by the plantation system, it accepts those conditions as the most pressing and the emphasis of the remainder of the report is based upon conditions as found on plantations.[2]

After a general statement of the causes and effects of tenancy, the Committee proceeds to give definite recommendations for a program of action. On the whole, the stand of the Committee is this:

"We believe that in the roots of the tenancy problem lies the major cause for the depletion of our farm land, farm improvements, and other natural resources; that tenancy tends to destroy home life, community life, cooperation between agricultural groups, and makes for an unstable, shiftless, indolent type of peasant farmer. Since tenancy hangs as a great cloud over this state threatening to impoverish its productive capacity, and since it tends to increase at an alarming rate, we recommend that immediate and drastic steps be taken to make home owners out of as many of these tenant farmers as the government is able to finance. We believe that the best and simplest solution for tenancy is to put the tenant on his own farm. Home ownership is the real solution. It eliminates all the complicating factors of administering landlord-tenant relationship. It puts the tenant where he ultimately hopes to be.

"We believe that if those tenants who are worthy and capable of home ownership are given a chance to become home owners, it will tend to correct the destructive forces which are so prevalent. We believe there are more tenants in the state now capable of owning and managing their own farms than the government will be able to finance; that the problem is not so much that of finding tenants who are capable for ownership as it is the problem of financing those tenants into ownership" (pp. 24-5).

To provide these finances the creation by the Federal Government of a tenant farm home corporation to borrow money on the credit of the United States to lend to tenants for the purchase of homes is recommended. The tenant obligations under the recom-

[1] "Agricultural Labor Problems in Arkansas," Arkansas State Policy Committee, *Published Paper No. 1* (Oct., 1936). The Arkansas State Policy Committee is a branch of the Southern Policy Committee, an unofficial and non-political organization. The report examined here was prepared by a sub-committee composed of H. W. Blaylock, M. C. Blackman, Joe Hardin, J. D. Eldridge, and Marshall T. Steele.

[2] The Committee accepts the definition of a plantation that has ordinarily been used in other tenancy reports—namely, "a unified agricultural organization of five or more tenant tracts under one management or practically a continuous tract of land operated as a single unit with respect to methods of control of labor and of production, all or a part of which may be worked by wage hands or let to tenants."

mendations are to be amortized in 40 to 60 years.

Better housing, the Committee feels, must come only through increased farm income and the desire of farm people for better houses. "Your committee is thoroughly in accord with any program which ultimately would lead to better farm houses which might be constructed out of the income of the farms and within the means and ability of their owners to meet the obligations on them" (p. 26).

As a means of improving the present tenancy system the report recommends a greater production of foodstuffs by tenants. On the plantations the Committee recommends that this be done on cooperatively worked gardens located centrally. Likewise, hogs and dairy cattle could profitably be added to the plantation organization to make use of land not now in crops to supply a better diet to the tenants.

Educational opportunity for the children of tenant farmers has been sorely deficient in the plantation region. The Committee recommends "not so much, more education, but better education, revitalized education; education which will bring us closer to the heart of social, economic and political problems and lead us to a better understanding of how to solve them" (p. 29).

In addition, the Committee suggests that the public school system emphasize health instruction. "We recommend also that the federal government provide half the cost and the state government the remainder of the cost of providing a permanent free clinic in each county with nurses who regularly visit homes and give health instruction" (p. 29).

In so far as landlord-tenant relationships are concerned, the Committee feels

> "that sufficient information is not now available to give specific recommendations on the subject of improving landlord-tenant relationships . . . . Your committee realizes that there cannot be complete elimination of tenancy . . . . that tenancy must be abandoned by process of evolution and education rather than revolution. This means that for the greater immediate and long run effect, there must be a policy involving both the improving and strengthening of the present tenancy system" (p. 30).

Three points of approach to this problem are suggested: (1) increasing length of lease, (2) adequate division of income, and (3) "improvement in the system of account keeping," where the landlord furnishes tenants from a commissary.

In addition to these changes in tenure itself, the Arkansas State Policy Committee recommends a reduction of the ad valorem tax on land and increase of the state income tax.

The Committee feels that increased mechanization of farms and displacement of tenants are inevitable. Thus welfare in rural areas is dependent upon industrial development in the State and elsewhere to relieve surplus rural population. Moreover, the Committee is particularly opposed to the extension of the part-time farming movement. "Your committee believes that farming is a full time job for the farmer who owns his farm" (p. 33).

The appearance of this report is exceedingly timely. Not only is federal legislation on this subject pending, but state action is also likely. The report epitomizes an increased public interest in the subject of agricultural land tenure.

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Suburban County Zoning in Wisconsin

THE prominence achieved by rural county zoning in Wisconsin has tended to obscure the existence of other types of county zoning in this State. Yet the enabling act of 1923 was designed especially to suit the needs of the populous urbanized counties. Not until the amendment of 1929 permitted counties to zone for agriculture, forestry, and recreation, was the door opened for the purely rural zoning used in the north and central parts of the State. Suburban zoning preceded rural zoning in at least six counties.

Kenosha County, a small but populous county in southeastern Wisconsin, passed an ordinance in 1926 which provided for the establishment of land-use districts in the town of Somers. It was described

> "An ordinance to regulate and restrict the location of trades and industries and the location of buildings designed for specific uses; to regulate and limit the height and bulk of buildings hereafter erected or

altered; to regulate and determine the area of yards, and other open spaces surrounding buildings; to regulate and limit the density of population."

Three use-districts—namely, residential, commercial, and industrial—were provided, and specified use regulations were established for each. Enforcement of these regulations was placed in the hands of the town clerk of the town of Somers, and appeals from his decisions could be made to a Board of Appeals of five members appointed by the town chairman. It was left to the discretion of the County Board of Supervisors to make any amendments or changes in the ordinance.

Milwaukee County followed with a comprehensive zoning ordinance in 1927, but since this has been described adequately elsewhere, it will be omitted here.[1]

Subsequent county ordinances followed fairly closely the pattern of the Kenosha ordinance. Outagamie County in 1929 enacted a county zoning ordinance providing for the formation of use-districts in the town of Grand Chute. To the three use-districts designated for Kenosha County (residential, commercial, and industrial) were added a "local business district" and an "agricultural district." The formation of the agricultural district was an unusual feature in that these suburban zoning ordinances did not ordinarily extend into rural territory. In this district, any kind of manufacture was prohibited other than the manufacture of products, the major portion of which was to be sold for local use on the premises by the manufacturer to the consumer. No restriction was placed on the production or sale of farm or dairy products. Other prohibited uses included all those not permitted in the commercial district, as well as auto-wrecking establishments and garages if located too near to public institutions. In all other respects, the Outagamie ordinance resembled that of Kenosha County.

The Racine County ordinance, enacted in 1930, provided only for the establishment of a residence use-district in the town of Mt. Pleasant. In the prescribed district, no building or premises were to be used and no building was to be subsequently erected or structurally altered except for one of the following uses: one-family dwellings, churches, schools, libraries, telephone offices, farming and truck gardening, two-family dwellings, boarding and lodging houses, hotels, hospitals and clinics, institutions, nurseries and greenhouses, private clubs, accessory building, and offices of a physician. The entire township not in the restricted district was left unrestricted for all lawful uses.

The town clerk was to enforce the provisions of the ordinance and appeal could be made only to the town board. In a decision handed down on May 27, 1935, Judge Belden of the Circuit Court held the Racine ordinance to be unconstitutional on several grounds. It was an unreasonable exercise of the police power because the ordinance was haphazard and had no relation to the public health, safety, and general welfare. The ordinance violated the Wisconsin statutes providing for enactment of county zoning ordinances and the establishment of boards of adjustment. It was also illegal because it attempted to delegate legislative powers and unreasonable discretion to the town clerk and the town board—contrary to the Constitution and the statutes. This decision can in no way be interpreted as a court test of county zoning in general, but does point out the dangers of carelessly drawn ordinances.

Similar ordinances that provided for establishment of residence use-districts were drawn in Manitowoc County in 1932 for a boulevard extending from the city of Manitowoc into the town of Manitowoc Rapids, and in 1934 for the towns of Manitowoc and Two Rivers. Only small areas along a main highway were restricted for the purpose of protecting a beautiful roadway between the cities of Two Rivers and Manitowoc.

In Walworth County in 1934, zoning ordinances were enacted in the towns of Delavan and LaGrange for the protection of residential property in certain areas against the encroachment of commercial establishments. Compliance with the enactment was to be enforced by injunctional order at the suit of Walworth County or by owners of real estate in the district affected by the ordinance.

While all these county zoning ordinances may have played an important part in keeping alive the interest in the possibilities of zoning outside of strictly rural or strictly urban areas, they have not been prepared

[1] E. A. Howard, "Planning for Milwaukee County," 5 *City Planning* 214 (1929).

and administered with sufficient care and thoroughness to achieve the best possible results. Walworth County is now attempting to remedy these defects through a truly comprehensive zoning ordinance which, it is hoped, will be enacted early in 1937. The proposed ordinance divides the entire county into five districts—namely, residential, agricultural, forestry, business, and industrial. Walworth County is largely agricultural in character, but has some highly developed residential and recreational areas built up around certain lakes. Preparation of the ordinance was preceded by a careful study of the entire County with respect to physical, financial, and all other pertinent factors. Proper administrative and enforcement provisions are set up by the ordinance, and all possible care has been taken to make the ordinance a reasonable use of the police power.

This ordinance, when enacted, may well serve as a model for future county zoning ordinances in counties with both agricultural and industrial development. Some experimentation is obviously necessary if county zoning is to achieve the best possible results. The "piecemeal" zoning described above may well serve as a stepping stone toward later, more comprehensive enactments.

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Trend in Rural Tax Delinquency in Wisconsin

TAX delinquency and the "new public domain" resulting from reversion of privately owned real estate to the states or to counties has become a problem almost national in scope. In the Lake States the delinquency of cut-over land owned by speculators, land companies, and individuals who held the land for resale was the first manifestation of this problem, a result of the agricultural depression starting in 1920. Tax certificates on 2,593,163 acres or nearly 25% of the entire area of the 17 northern Wisconsin counties were offered for sale at the 1927 tax sale, but only 18% were bought by private individuals; 82% were left with the counties.[1] Later on, delinquency also appeared in central Wisconsin and, with the urban depression, in the industrial areas of the State. However, the 18 northernmost counties still lead in the proportion of land on which taxes have not been paid and of land reverted to the counties for non-payment of taxes. A small portion of the southern area is as high in delinquency at the present time as the northern, centering around Adams and Juneau counties and embracing the sandy and marshy central area of the State. Delinquency is lightest in the part of the State lying southeast of a line extending from Green Bay to the mouth of the Wisconsin River.

To illustrate the extent and trend of tax delinquency in rural areas, Iron and Dane counties have been selected; the former in the extreme north bordering on the Michigan line, the latter being the county in which Madison is located.[2] Iron and Dane counties are fairly representative of the northern region and the southeastern lowest delinquency area, respectively. Table I indicates the extent of the problem in the towns[3] of each of these counties in terms of the percentage of the dollars of taxes annually levied which was unpaid on each of a number of specified successive dates. Figures are shown for each of the levies of 1928 to 1932, inclusive. The trend in delinquency is shown by noting the proportion either of the levy or of the acreage that is delinquent for any given year. For instance, in 1928, $1,292,173 was levied in Dane County; 2.7% of it was in arrears at the first delinquency date. By December 31, 1929 this was reduced to 1% and by December 31, 1933 to 0.2%. Comparison of these trends in the two counties, with respect both to the amount of the levy and of the acreage delinquent, shows not only that delinquency was relatively much heavier in Iron than in Dane County, but it is being reduced at a slower rate.

Table II shows similar data for the two counties in terms of acreage. Nearly all

[1] Hibbard, Swenehart, Hartman and Allin, "Tax Delinquency in Northern Wisconsin," *Wisconsin Agricultural Experiment Station Bulletin* 399 (1928).

[2] The data are taken from a cooperative study of tax delinquency in Wisconsin by the United States Department of Agriculture and the Wisconsin Agricultural Experiment Station.

[3] That is, the study covered only rural territory, not that within incorporated cities and villages.

TABLE I. PERCENTAGE OF THE REAL ESTATE TAXES LEVIED (1928–32 INCLUSIVE) WHICH WERE DELINQUENT AT SPECIFIED DATES, DANE AND IRON COUNTIES, WISCONSIN

Year of Levy	Amount of Levy	Percent of Levy Delinquent on Given Date					
		First Delinquency Date*	Dec. 31, 1929	Dec. 31, 1930	Dec. 31, 1931	Dec. 31, 1932	Dec. 31, 1933
Dane County							
1928	$1,292,173	2.7%	1.0%	0.6	0.3%	0.2%	0.2%
1929	1,312,128	2.8	.....	1.2	0.7	0.6	0.4
1930	1,165,715	4.0	.....	.....	1.2	1.0	0.7
1931	928,199	8.2	.....	.....	.....	4.9	3.6
1932	727,191	11.5	.....	.....	.....	.....	8.4
Iron County							
1928	$ 227,236	12.2	10.9	10.2	9.8	8.7	1.1
1929	226,349	18.9	.....	18.0	16.7	15.5	3.5
1930	206,558	20.4	.....	.....	18.9	16.8	7.0
1931	186,258	28.0	.....	.....	.....	26.7	16.3
1932	160,781	60.0	.....	.....	.....	.....	48.6

*The year in each case is that next following the year of the levy. The month and day varied somewhat.

percentages in this table are larger than the corresponding ones in Table I because, proportionately, a larger amount of poor than of good land is tax delinquent.

Further light on the mounting burden of these delinquencies is supplied by a presentation of the accumulated percentages of delinquency with reference to total real estate assessments of each year and to total assessed acreage by years. These data are

TABLE II. PERCENTAGE OF THE ASSESSED ACREAGE OF THE RURAL AREAS DELINQUENT ON EACH OF A NUMBER OF SPECIFIED DATES, DANE AND IRON COUNTIES, WISCONSIN (LEVIES OF 1928 TO 1932 INCLUSIVE)

Year of Levy	Assessed Acreage	Percentage of Assessed Acreage Delinquent on Given Date					
		First Delinquency Date*	Dec. 31, 1929	Dec. 31, 1930	Dec. 31, 1931	Dec. 31, 1932	Dec. 31, 1933
Dane County							
1928	733,741	3.0%	1.3%	0.7%	0.5%	0.4%	0.3%
1929	735,173	2.9	.....	1.5	0.9	0.7	0.5
1930	732,256	3.9	.....	.....	1.4	1.2	1.0
1931	737,587	7.3	.....	.....	.....	4.1	3.0
1932	741,392	10.4	.....	.....	.....	.....	7.5
Iron County							
1928	428,336	20.0	18.8	17.5	17.0	14.9	2.0
1929	442,740	27.2	.....	26.2	24.8	23.0	3.9
1930	421,052	35.8	.....	.....	33.7	30.1	9.5
1931	393,990	42.4	.....	.....	.....	34.7	18.9
1932	374,447	66.2	.....	.....	.....	.....	37.7

*The year in each case is that next following the year of the levy. The month and day varied somewhat.

given in Table III. The accumulated percentages represent only the delinquency in the levies of 1928-1932 inclusive. The accumulated delinquency was measured as of the end of each of the years 1929-1933 inclusive. The percentages show the accumulated *net* delinquency. For each county, the tax bills which had not been paid on time but which were paid before the end of each of these years were excluded from the figure for that year.

TABLE III. CUMULATED PERCENTAGE OF TAX DELINQUENCY, IN TERMS OF ASSESSED VALUE OF REAL ESTATE AND OF ASSESSED ACREAGE, RURAL AREAS, DANE AND IRON COUNTIES, WISCONSIN

(Levies of 1928-1930 Inclusive)

Cumulated Percentage of Assessed Value of Real Estate Delinquent on	Dane County	Iron County
December 31, 1929.....	0.1%	0.4%
December 31, 1930.....	0.3	1.0
December 31, 1931.....	0.4	1.7
December 31, 1932.....	0.6	2.8
December 31, 1933.....	0.5	2.9
Cumulated Percentage of Assessed Acreage Delinquent on		
December 31, 1929.....	1.1	18.9
December 31, 1930.....	1.9	28.9
December 31, 1931.....	2.2	37.8
December 31, 1932.....	5.5	49.7
December 31, 1933.....	9.6	54.2

The trends in the two counties are similar but the severity of the delinquency problem in Iron County, relative to Dane County, is very striking. These tables do not show clearly the decreasing delinquency indicated in Tables I and II. The reason is that, while some of the delinquency of 1929 was reduced in 1930, the delinquency of the latter year must be added to the remaining delinquency of the former year. In other words, the accumulated delinquency is the percentage for both years. Thus, while the delinquency of any given year may be less than that of the preceding year, to this has been added the new delinquency which is still larger for the current year.

As a result of tax delinquency, many local units of government are in very serious financial condition. Delinquency, however, is not a separate problem. It is a product in part of the economic depression; of the excessiveness of tax levies on real property; and, in some localities, of the use of land for purposes for which it is not economically suited; and, finally, of sparseness of settlement.

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Public Utilities Department

E. W. MOREHOUSE, *Editor*

The Holding Companies Lose the First Skirmish

THE vanguard of the mass of litigation testing the federal Public Utility Holding Company Act of 1935 came before the Supreme Court of the United States in its October (1936) term,[1] but the issues involved therein, while of sufficient gravity and moment to procure certiorari, did not even remotely or indirectly involve the validity of the Holding Company Act or any part thereof.

The North American Company, on November 26, 1935, and the American Water Works and Electric Company, on November 27, 1935, brought suit in the United States District Court for the District of Columbia to enjoin enforcement of the Holding Company Act on the ground that said Act in its entirety is unconstitutional and void. The members of the federal Securities and Exchange Commission (who were defendants in the District of Columbia cases and petitioners in the Supreme Court for certiorari), on November 26, 1935, filed a bill of complaint in the District Court of the United States for the Southern District of New York, to compel Electric Bond and Share Company, a holding company, and five of its subsidiary intermediate holding companies, to register with the Commission in accordance with the Act. In the New York case the defendants by cross bill attacked the validity of the Act.

On December 7, 1935, the Attorney General of the United States moved in the District of Columbia court for a stay of proceedings in the North American and American Water Works cases. In support of the motion it was shown that numerous other suits involving the validity of the Act had been filed by other plaintiffs in various federal district courts. The motion was resisted by the plaintiffs on the ground, among others, that the court lacked the power to grant the stay. The District Judge granted the stay in an order expressing his conclusions and reasons therefor. Apparently, the stay granted by the District Court was for the entire and indefinite period which might be necessary in prosecuting the test case to a finality in the United States Supreme Court.

Upon appeal from the order of the District Court, the Court of Appeals for the District of Columbia, with four judges sitting, delivered three opinions, the first concurred in by two justices, a second but generally harmonious opinion by one justice, and a dissenting opinion by the remaining justice. The effect of the first and second opinions was to reverse the stay order and remand the cause "for further proceedings not inconsistent with the opinion of this court." In other words, the Court of Appeals ruled that the District Court had erred in granting the stay.

Mr. Justice Cardozo, in writing the opinion for the Supreme Court, points out that the District Judge would have difficulty conforming to the opinion of the Court of Appeals since there was no opinion concurred in by a majority of that Court. The Supreme Court's opinion therefore undertakes to clarify the confusion which had arisen and announced the rule that the District Court had the unquestioned power in the control of its own docket and business to stay proceedings therein where good and sufficient reason for such stay was found to exist. The opinion also holds that any stay extending beyond the date upon which the District Court of New York shall have entered its judgment in the Electric Bond and Share case would be an unreasonable stay. The case is reversed with instructions that the District Court reconsider the motion and enter an order consistent with the Supreme Court's opinion.

Although the issues before the Supreme Court in no way involved the validity of the Holding Company Act, the Court did use the occasion to refer to the complexity, significance, and importance of the issues arising out of the Holding Company Act, and of the necessity which will arise therein for the "minute investigation of intercorporate relations, linked in a web of baffling intricacy." Even though the decision affords

[1] *James M. Landis et al. v. North American Co.; James M. Landis et al. v. American Waterworks & Elec. Co.*, ——U. S. ——; 57 Sup. Ct. 163 (December 7, 1936.)

no hint as to what will be the eventual outcome of the Act, it must be recognized that here has occurred one of the major preliminary skirmishes and that the Government has been in the main victorious. It was obvious that the Government was determined to see to it that the first case to reach the Supreme Court of the United States for a decision on the merits should be one in which the facts would be most favorable to the Government. The Electric Bond and Share Company case is, in the opinion of the Attorney General, that case. Whether the Government's victory in this skirmish is an indication that "cooperation" by the judiciary in bringing about so-called social progress without the necessity of changes in the Constitution is coming to pass, is of course mere speculation. The most that can be said is that here the question was a close one. The Supreme Court might, by attaching greater emphasis to certain facts which it did notice, have held the stay requested unwarranted and thereby have dealt the Government a serious rebuff. This the Court did not do.

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Joint-Board Procedure under the Motor Carrier Act

THE degree of effectiveness of any public utility regulatory law depends in large measure upon the soundness of the plan for its administration. If it is too early to pass final judgment on the practicability of the joint-board administrative procedure established by the Motor Carrier Act of 1935,[1] the acid test of experience in the first 18 months of its operation has revealed that the I.C.C. and the cooperating state public service commissions have confronted minor, if not major, difficulties which should be of interest not only to regulatory experts but of considerable general interest to students of public administration.

Briefly, the Act divides interstate motor carrier cases between the I.C.C. or its examiners and joint boards composed of state officials. While ultimate authority in all matters rests with the Commission, it is directed, when the matter at issue involves not more than three states, to refer to a joint board for appropriate proceedings matters which involve applications for certificates, permits, or licenses; the suspension, change, or revocation of certificates, permits, or licenses; applications for approval and authorization of consolidations, mergers, and acquisitions of control or operating contracts; complaints as to violations by motor carriers or brokers of the general regulations established; and complaints as to rates, fares, and charges of motor carriers or the practices of brokers. When the matter to be considered involves more than three states, the Commission has the option of referring it to joint boards. A joint board is composed of one representative from each state concerned in the proceeding, usually a commissioner or some other representative of the state public service commission. In acting upon matters referred to them, joint boards are vested with the same rights, duties, and powers as are vested in members or examiners of the Commission. Orders recommended by a joint board become effective as orders of the Commission unless exceptions are filed within 20 days after service upon interested parties, or such other time as the Commission may decide upon, or unless stayed by the Commission itself.

For this administrative design the state commissioners themselves are mainly responsible. Through their national organization, the National Association of Railroad and Utilities Commissioners, it was suggested originally to Congress in 1925, and during the decade which elapsed before enactment of the Motor Carrier Act of 1935[2] most active support for the plan came from this group of state officials. Thus, from the time of earliest Congressional consideration, the state commissioners have contended that their services should be utilized in administering federal regulation of interstate motor carriers. They based this contention on the following grounds: (1) decentralized administration is required by the essentially local character of motor carrier operations and regulatory problems;

[1] Public Act No. 255 (74th Cong., 1st sess.), cited as Part II of the Act to Regulate Commerce.

[2] The essential features of this plan were embodied in the bill, S. 1734, introduced by Senator Cummins on December 16, 1925, and drafted by a special committee appointed by this Association.

and (2) since motor carrier regulation had been pioneered by the states, the experience of the state commissioners should be made use of directly by giving them important administrative functions.[3] Not so overtly expressed, although an important factor, was the reluctance of the state commissioners to relinquish any part of their regulatory authority over motor carriers. The gradual and inevitable encroachment of the I.C.C. upon their powers over steam railroads under Part I of the Act to Regulate Commerce had not been forgotten.[4]

Since this administrative plan represents a concession to state interests, it would seem reasonable to assume that the state commissioners would find the functions assigned to them by the I.C.C. anything but onerous. However, at the Forty-eighth Annual Convention of the National Association of Railroad and Utilities Commissioners at Atlantic City, November 11, 1936, this group voiced considerable dissatisfaction with the actual operation of a plan which was their own brain-child. Had this discontent concerned merely a few minor aspects which could be corrected by routine changes in the administrative policy of the Commission, the matter would hardly justify a comment in this *Journal.* However, one of the difficulties disclosed by the state commissioners strikes at the very heart of this plan for local and decentralized administration. It is, therefore, not to be dismissed lightly either by those having responsibility for administration of the Act or by those interested in any plan which might effectively solve the jurisdictional difficulties arising from our federal form of government.

The main criticism of the joint-board procedure expressed at this Convention concerned the heavy burden of work which participation in federal regulation places upon the shoulders of the state commissioners. The commissioners confessed that few of them had realized in the formative period the range of functions in which joint-board representation would involve their participation; that the work of hearing applications for certificates and permits alone—the chief activity engaged in to date—required the commissioners to devote themselves to federal functions and to be away from their state offices so much of the time that it was becoming impossible to carry out properly their primary duties in local regulation. One of the commissioners stated that the plan "has made traveling salesmen of us for the Motor Carrier Bureau," a statement not only indicative of the amount of work involved in holding hearings at points convenient to the parties in interest but suggestive, perhaps, of a low regard for the dignity of the work. It was also stated that the rule requiring all states involved in a proceeding to send a joint-board member to the hearing places a heavy burden upon the state commissions. This difficulty brought the suggestion that the state commissions be allowed to decide whether a case is of sufficient importance to justify representation. In cases where a particular state is only slightly affected, the other states having major interest in the matter might hear the case and make the decision; in some cases the matter might profitably be heard by the examiner—the representative of the Bureau of Motor Carriers in attendance for advisory purposes. The Report of the Committee on Motor Vehicle Transportation stated that greater discretion should be given the state commissions in selecting the particular person to serve on joint boards to the end that the work might be shifted from the commissioners to competent employees of the commissions.[5] Another com-

[3] "A basic principle of the bill is that the regulatory bodies of the several States shall share in its administration because of their intimate knowledge of local conditions, their more direct contacts with the carriers subject to regulation, and the relation of such regulation to the use of the State's highways. To that end provision is made for the primary consideration of all important matters by joint boards composed of the representatives of the States wholly or chiefly concerned." (Senator Burton K. Wheeler, 79 *Cong. Rec.* 5653.)

[4] For a detailed discussion of the evolution of this administrative plan, its advantages and disadvantages, and its constitutionality, see Paul G. Kauper, "Utilization of State Commissioners in the Administration of the Federal Motor Carrier Act," 34 *Michigan Law Review* 37 (November, 1935).

[5] The original rule adopted by the Bureau of Motor Carriers required each state commission to nominate one principal and four alternates to serve as joint-board members for that state. From this panel the Bureau then made the final appointment to each joint board designated. Since the commissioners were generally nominated principals, and since the Bureau followed the practice of appointing the principal, only commissioners served as joint-board members during the early period of administration. Only when special requests were made by the state commissions were alternates, usually employees, appointed to serve. This rule has been modified to allow state commissions a wider degree

(Footnote 5 continued on page 99)

plaint concerned the requirement of the law that the hearings be held "at such places within the United States as are convenient to the parties." It was contended that this practice made it necessary for joint-board members to travel excessively, sometimes only to discover that the chief party in interest had decided not to enter an appearance after all. Other criticisms concerned the delays encountered in getting expense money from the Comptroller and the inadequacy of the allowance made by the Federal Government to state representatives for subsistence and traveling expenses while serving on joint boards.

Inevitably this administrative plan would develop difficulties to impede its operation. No law can be drawn, concerning such a complex matter as federal regulation of motor carriers, to meet every eventuality. Many of these difficulties, however, can be resolved satisfactorily to all parties when experience is sufficient to indicate the real weaknesses—namely, the difficulty confronted in appointing joint-board members; delays in handling expense accounts; and the dating of hearings for the convenience of the state officials who must participate. However, the increase in the amount of work devolving upon the state commissions, already patently inadequately financed and staffed, is a serious matter indeed. If the state commissions cannot send qualified representatives or fail to send any representatives whatever to serve for the I.C.C. on joint boards and, if the hearings cannot be held at places convenient to the parties in interest, the prime objectives of decentralized administration and utilization of the experience of state commissioners in this work, implicit in joint-board procedure, will fall short of realization and the whole plan will break down of its own weight. This in effect is what Mr. W. A. Hill, Chief of the Section of Complaints, Bureau of Motor Carriers, frankly reminded the state commissioners assembled in Atlantic City. He further pointed out that in actual practice in considerably more than half the cases only one joint-board member is in attendance and in some none are available, leaving these hearings to be conducted by the I.C.C. examiners alone.

Whether it is possible to have centralization of authority in a national agency and still retain in considerable measure the advantages of local control over matters involving local problems has been recognized for a long time as a vital question in public administration. The administrative experiment now being conducted by the I.C.C. and the participating state commissions under authority of the Motor Carrier Act of 1935 should throw some valuable light upon the problem. Should the plan later be supplanted by some form of regional administration directly by the I.C.C. or by the examiner system long employed in railroad regulation, perhaps its only practical function will prove to have been its success in winning the support of state commissions for federal regulation of motor carriers. At this moment, no one can predict with any assurance whether these and other difficulties likely to arise from the actual operation of the plan will prove insurmountable.

It is hoped, however, that the challenge offered by this plan to state officials to find ways of making the procedure of dual-control work satisfactorily will be accepted and that every reasonable effort will be made, both by the I.C.C. and the state commissions, to test fully the possibilities of this cooperative scheme before allowing it to fall into the discard. Although decentralization of administration is probably not so urgent in electric and telephone and telegraph regulation because of the larger-scale operations in these industries, there is, nevertheless, considerable need for a workable method of dual-control in these utilities now that the Federal Government has adopted the policy of playing a larger part in these fields of regulation through the activities of the Federal Power Commission and the Federal Communications Commission. If dual-control cannot be made to work satisfactorily, exclusive federal control will come eventually; and, with it, inadequate consideration of local problems and perhaps finally the breakdown of the whole system of commission regulation. For those who believe in the importance of local control and of the institution of regulation itself, this would be an exceedingly unfortunate development.

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(Footnote 5 continued from page 98)

of latitude in selecting joint-board members. The Bureau now appoints all approved nominees of the state commissions as joint-board members, leaving to the individual state commission the decision as to the final selection of the one to serve in a particular proceeding.

A Constitutional Blessing to Utility Accounting Reform

ON DECEMBER 7, 1936, the United States Supreme Court gave its approval[1] to a revised uniform system of accounts for telephone companies prescribed by the Federal Communications Commission. This decision had been awaited with great interest by both telephone and electric utilities as well as state commissions and the Federal Power Commission, for it sanctioned a new principle of accounting for utility property which was embodied in several recently revised systems of accounts[2]. This new principle is that the property of a utility shall be reclassified to show separately the original cost of property in service. Although other provisions were also controverted, this was the chief ground of complaint. No new constitutional ground was broken. But the ruling represents a victory for state and federal commissions seeking to make regulation more effective.

Since *Smyth* v. *Ames*,[3] original cost has been one of the factors for consideration in valuing utility property so as to avoid confiscation. Ordinarily, with an adequate accounting system, the book cost of property installed by a utility represents original cost. During the pre-depression decade, however, many utility properties were sold at prices far above original cost. These properties were recorded on the books of the new owners at various figures, some of them not representative of prices determined by arms-length dealings.[4] Frequently these purchased properties were not classified by detailed plant accounts and included intangibles only remotely identifiable with physical property. Hence in a great many cases book values of property ceased to indicate original cost. To determine this figure in a valuation proceeding required time-consuming and expensive appraisals or audits.

Five years ago the Public Service Commission of Wisconsin partially revised its system of accounts for electric utilities[5] and among the revisions was a requirement that in all future property acquisitions the original cost at the time the property was first devoted to public service should be ascertained and recorded. Any excess of purchase price above original cost was placed in a separate account for ready analysis. Amounts in this "purchase adjustment account" were made subject to amortization or other disposition as the Commission might direct after analysis.

This same principle was urged upon the Interstate Commerce Commission in protests by the state commissions against the revision of the classification for telephone companies made effective in 1933. The Interstate Commerce Commission declined to accept these views[6]. The Federal Communications Commission, however, did adopt this principle in its revision of the 1933 system. Whereupon the Bell system companies and a few independents challenged the Commission's authority to make this requirement. A stay of the Commission's order was secured in the District Court and after trial two minor provisions of the new system of accounts were enjoined, the balance of the system being approved[7]. From this decree the telephone companies appealed.

Mr. Justice Cardozo, delivering the unanimous opinion of the Court, first reviewed the leading prior cases. On three occasions[8] the Supreme Court passed upon a commission's constitutional and statutory power to prescribe uniform accounting rules. In each case this power was upheld. The rule established was that the Court would not substitute its own discretion for that of a commission unless there was a clear abuse of power as shown by requirements "so

[1] *Amer. Tel. & Tel. Co. et al. v. U. S., Federal Communications Commission, and National Association of Railroad and Utilities Commissioners*,—U. S.—, 57 S. Ct. 170, 81 L. ed. Adv. Ops. 116.

[2] Uniform System of Accounts for Electric Utilities, Federal Power Commission; Uniform Systems of Accounts for Electric and Gas Utilities, National Association of Railroad and Utilities Commissioners.

[3] 169 U. S. 466 (1898).

[4] Federal Trade Commission, Utility Corporations, 70th Cong., 1st Sess., Doc. 92, No. 72-A, p. 845.

[5] Public Service Commission of Wisconsin, 2-U-66, Nov. 24, 1931.

[6] 203 I. C. C. 13 (1934).

[7] *Amer. Tel. & Tel. Co. v. U. S.*, 14 F. Supp. 121 (1936).

[8] *Interstate Commerce Commission v. Goodrich Transit Co.*, 224 U. S. 194 (1912); *Kansas City Southern Ry. v. U. S.*, 231 U. S. 423 (1913); *Norfolk and Western Ry. v. U. S.*, 287 U. S. 134 (1932). See also *U. S. et al. v. Atlanta B. & C. Ry.*, 282 U. S. 522 (1931); *Atlanta B. & C. Ry. v. U. S.*, 296 U. S. 33 (1935); *Chesapeake & Ohio Ry. v. U. S.*, 5 F. Supp. 7 (D. C. E. D. Va. 1933).

entirely at odds with fundamental principles of correct accounting"[9] as to be "the expression of a whim rather than an exercise of judgment."[10]

Before the Supreme Court, the companies stressed four principal arguments against the original-cost principle. It was alleged that (1) they are prevented from recording their actual investment in their accounts, thus misleading shareholders, investors, tax collectors and others; (2) they are prevented from recovering depreciation expense on their actual investment and instead are required to base depreciation on cost to a prior owner; (3) they are required to record an estimate of cost which exposes them to the hazard of criminal prosecution; and (4) the requirements make it difficult to determine the amount to be written out of the property accounts when the property is retired.

The first two arguments apparently caused the Court some concern. Their doubts were resolved by the somewhat unusual expedient of asking for an administrative construction of the accounting system by the Communications Commission. The Court was satisfied when the Commission construed its requirements as permitting (1) retention in the Adjustment Account of amounts found, after investigation, to represent legitimate investment and (2) depreciation or amortization of such legitimate investments through an operating expense account. This construction was declared binding upon the Commission, and in the Court's mind distinguished the case from *New York Edison Co.* v. *Maltbie*.[11]

The remaining arguments against the original-cost principle were likewise found to be without merit. As the Court pointed out, "estimates are at times inevitable in any system of accounts." There is no substantial hazard of criminal prosecution from the use of estimates, since violations of the act must be knowing and wilful before such penalties are applicable. The difficulty in ascertaining amounts to be written out of the accounts upon retirement of the property was not believed to be any greater than if the same property were recorded in a single account. In any event the Commission could issue clarifying instructions.

The companies also objected to a provision calling for recording only "just and reasonable" charges. To which the Court replied: "There is surely nothing arbitrary in establishing a standard of behavior so consistent with good morals. On the contrary, the need for such a standard has been made manifest for years as the result of intercorporate relations that are matters of common knowledge."

It was also alleged that the separate classification of plant held for future use was so vague as to be arbitrary. This, too, was found to be without merit, since property in present use "comes very near to defining itself" and the Commission can issue clarifying instructions. As for the expense of applying the entire system, in the Court's opinion the evidence did not show that this was beyond "the bounds of reason."

The ruling of the court is expected to deter other utilities from litigating similar principles in the revised systems of accounts prescribed by the Federal Power Commission for electric utilities and recommended by the National Association of Railroad and Utilities Commissioners for both electric and gas utilities. It is to be hoped that, backed by this ruling, a substantial degree of national uniformity, in both federal and state jurisdictions, will be attained in public utility accounting. If this can be accomplished, more effective regulation will be given a real boost.

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[9] *Kansas City Southern Ry. v. U. S., supra.*

[10] *Amer. Tel. & Tel. Co. v. U. S., supra,* n. 1.

[11] 244 App. Div. 685 (N. Y.) (1935), aff'd. 271 N. Y. 103 (1936).

"Progress in Public Utility Regulation"

At the convention of the National Association of Railroad and Utilities Commissioners in November, 1936 the report of the Special Committee on "Progress in Public Utility Regulation" received comparatively little attention. This may have been because of the broad scope of the report which did not lend itself conveniently to discussion. It would be unfortunate, however, if its importance were not to be fully appreciated. In preparation of the text of the report the Committee had the

aid of two staff members of the Illinois Commerce Commission, D. L. Marlett, Research Assistant, and E. D. Ostrander, Assistant Supervisor of the Section of Rates and Research.

The entire report is a serious and comprehensive undertaking to show progress achieved in public utility regulation. At the outset it indicates that "progress" is forward movement which is contrasted with mere "change."

Extended research was necessary in preparing the report which presents in considerable detail, for several years past, the modifications of the laws in the several states, which have brought about progress and improvement in regulation, and shows how these changes have increased the responsibilities and duties of state commissioners. The work could not have been accomplished without intensive study on the part of the members of the Committee and the others who were associated with them.

The tabulations in the chart appended to the report were made by D. L. Marlett in cooperation with W. M. Strickler, formerly Research Assistant of the Illinois Rural Electrification Committee. They give in detail citations to new legislation in all states as passed during the years 1931-1936 inclusive. This information is invaluable for reference purposes, especially for commissions and general law libraries.

Comment on this report in another publication has stressed that part of the memorandum which indicated the extent of rate reductions made by privately owned utilities between 1933 and 1936. But this summary is not of relatively great importance in considering the whole report. The most significant feature is the recommendation for preparation of a "Manual of Standard Commission Procedures and Practices," which the Committee will undertake in the future.

Quite generally a national association group in any field of interest arranges for preparation and presentation of papers and committee reports at meetings which express the individual or small group opinion; and then such expressions are not studied by others and developed or extended thereafter. This Special Committee, however, has now laid down a definite plan by which the National Association of Railroad and Utilities Commissioners can, through this Special Committee, progressively develop a "Manual of Commission Procedures and Practices," which is a definite step forward in regulation. Such a compendium would serve as a textbook and be of extreme value and service to all those connected with regulation. It would also fill a definite need in the instruction of those who come new into regulation, either as members of a commission or of the commission staff, and should result in avoidance of errors and consequent delays.

The Committee is to be most highly commended for its excellent work and its report for this year is equalled in achievement only by that of the Committee on Statistics and Accounts.

EDWY L. TAYLOR
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Washington Supreme Court Declares Business of Contract Carriers Affected with a Public Interest

A RECENT decision by the Supreme Court of the State of Washington in *Prater* v. *Department of Public Service*[1] is noteworthy in connection with the question of whether contract motor carriers may be regulated as public utilities.

One of the most significant recent developments in public utility regulation has been the rapid growth of regulation of the contract motor carrier business. While only a few states attempted to regulate this class of carrier prior to 1931, today as many as 36 states[2] and the Federal Government[3] have brought contract carriers within the purview of their regulatory statutes. Typically, contract carriers are required to obtain from regulatory commissions permits authorizing them to operate on the public

[1] 60 Pac. (2d) 238, decided Aug. 20, 1936.

[2] For a complete summary of the present extent and character of state regulation of the business of common, contract, and private carriers by motor vehicle, see Appendix A, Reply Brief of the Washington Department of Public Service in *Harry Prater et al. v. Department of Public Service et al., supra*, n. 1.

[3] Public Act No. 255 (74th Cong., 1st sess.); see also the author's article, "The Motor Carrier Act of 1935," 44 *Journal of Political Economy* 464-504 (August, 1936).

highways, to file proper public liability and property damage insurance, to comply with prescribed accounting and safety standards, and to submit to a certain amount of rate regulation. It should be noted that the public service commissions of 22 states and the Interstate Commerce Commission have been delegated power to fix minimum rates of contract carriers for intrastate and interstate shipments, respectively. Of course, vehicles of contract carriers are subject to highway taxation, traffic control, and highway conservation measures of all states to the same extent as are all other vehicles using public highways.

However, although in many jurisdictions some degree of business regulation of contract motor carriers is an established fact, the states have met legal difficulties in imposing upon these carriers rates and service regulations as distinguished from purely police regulations such as are generally imposed upon all vehicles. Whether business regulation of contract carriers is constitutional has been argued many times before the courts and still is considered by most authorities on carrier law as not only controversial but unsettled.[4] Nevertheless, when regulatory statutes are properly drawn so as to distinguish between the legal duties of common carriers and those properly imposed upon contract carriers, a considerable degree of business regulation of the latter has met with court approval—but upon bases other than the customary one. Traditionally, when an industry has been singled out by legislatures for special governmental control of rates and service, such regulation has generally been upheld by the courts on the ground that the business is "affected with a public interest." Not so with the contract motor carrier!

A brief reference to the position of the Supreme Court on this question is pertinent. The early legislation of California,[5] Michigan,[6] and Florida[7] failed to win judicial approval because it treated contract carriers virtually as common carriers, either overtly by declaration as in Michigan or indirectly by imposing common-carrier obligations upon them as in California and Florida. In three significant decisions involving the statutes of these states, the Supreme Court ruled that it was unconstitutional to impose by "legislative fiat" the public obligations of common carriers upon contract carriers, since this would deprive them of their property without "due process of law."[8] While the Court did not in these decisions pass upon the question of whether the public interest in contract carriage would justify some form of business regulation, a legitimate inference would seem to be that it did not believe the business of contract carriers was then sufficiently impressed with a public interest to warrant imposing upon them the high degree of regulation applicable to, and the common law obligations of, common carriers. However, when the state legislators later avoided the errors in the legislation declared invalid by the Supreme Court by so drafting their motor carrier statutes as to distinguish carefully between duties and regulations imposed upon common carriers and those imposed upon contract carriers, business regulation of a character substantially similar to that previously declared unconstitutional was upheld by the same court. Thus, in *Stephenson* v. *Binford*[9] decided in 1932, the Supreme Court upheld the 1931 Texas statute[10] which gave the Railroad Commission of that State power (1) to deny contract carriers permits required to operate on public highways if the "proposed operation of any such contract carrier will impair the efficient public service of any authorized common carrier or common carriers then adequately serving the same territory"; and (2) to prescribe minimum rates to be collected by contract carriers "which shall not be less than the rates prescribed for common carriers for substantially the same service." However, the Court did not uphold this regulation on the ground that the business of contract carriage was clothed with a public interest, but rather on the basis of the State's ownership of its highways and its right to conserve them from physical destruction and to regulate their use so as to promote maximum utilization by the general public and safe operation. Such traffic as this regulation would throw back to the railroads

[4] Cf. Parker McCollester and Frank J. Clark, *Federal Motor Carrier Regulation* (New York: Traffic Publishing Co., 1935), pp. 53, 66.

[5] Stats. 1919, c. 280.

[6] Public Acts 1923, No. 209.

[7] Laws 1929, c's 13 and 700.

[8] *Michigan Pub. Util. Com. v. Duke*, 266 U.S. 570 (1925); *Frost v. Railroad Com. of California*, 271 U.S. 583 (1926); *Smith v. Cahoon*, 283 U.S. 553 (1931).

[9] 287 U.S. 251.

[10] Sess. Laws 1931, c. 277.

would lighten the burden placed upon the highways by the numerous contract carriers. Heartened by this decision, many states and the Federal Government have undertaken to regulate contract carriers since 1933, as is shown above.

Nevertheless, many authorities feel that business regulation of contract carriers, based upon a state's control over its highways and sustained in *Stephenson* v. *Binford*, does not rest on a solid legal foundation. They believe that the only firm foundation of such regulation is application of the principle that contract carriage, like common carriage, is affected with a public interest.

However, although the Supreme Court has yet to pass on the question of public interest as applied to contract motor carriers, the Supreme Court of the State of Washington in a very significant and clear-cut decision, *Prater* v. *Department of Public Service*,[11] decided August 20, 1936, upheld the Washington statute[12] authorizing the Department of Public Service to fix minimum rates of contract carriers operating on Washington highways on the ground that the business of contract carriers is affected with a public interest.[13] This case is of sufficient import to merit a brief consideration of the facts. The State of Washington was among those which amended their motor carrier statutes after the *Stephenson* v. *Binford* decision in 1932 so as to include contract carriers of property. At its 1935 session the Washington Legislature repealed its earlier statutes applying to motor carriers of property and substituted therefor Chapter 184, Laws of 1935. Section 12 of this Act vests the Department of Public Service

> "with power and authority, and it is hereby made its duty, . . . to fix, alter and amend just, fair and reasonable classifications, rules and regulations and minimum rates and charges of each such 'contract carrier' . . ."

Section 11 authorizes the Department to prescribe just, fair, reasonable, and sufficient rates for common carriers. Under authority of these provisions, the Department entered into an extensive investigation and held a series of hearings throughout the State during the summer of 1935 to determine just, fair, reasonable, and sufficient rates for common carriers and minimum rates for contract carriers. On January 15, 1936, the Department entered its first order in this rate proceeding, fixing exact rates for common carriers operating on routes between Puget Sound ports and Spokane and ordering the rates prescribed for common carriers to be lawful minimum rates for contract carriers operating on the same routes "when the service rendered the shipper is substantially the same."[14] This decision was based on the theory that preservation of essential common-carrier service requires protection of common carriers from rate-cutting by contract carriers, and that rate differentials granted shippers by contract carriers are tantamount to unlawful discrimination in favor of large shippers having sufficient tonnage to enable them to employ contract carriers to the disadvantage of the small shipper who must depend upon common carriers.

On March 27, 1936 a group of contract carriers entered a suit in the Superior Court of Spokane County seeking to enjoin enforcement of this order on the ground that both it and the law upon which it was based were unconstitutional. In a decision handed down May 13, 1936, a permanent injunction was granted by Judge William A. Huneke of this court on the assumption that the rate regulation authorized by the Washington motor-carrier statute did not show as its purpose the preservation of the highways and the safety of the traveling public and therefore could not be upheld under the rule laid down in *Stephenson* v. *Binford*. The Department of Public Service then appealed the case to the State Supreme Court, which set aside the lower court's order in a decision in which there was only one dissenting vote. In this decision the high court not only conceded that the rate regulation prescribed for contract carriers was constitutional because of its "direct bearing upon the conservation of the highways," but faced squarely the issue of public interest which the United States Supreme

[11] *Supra*, n. 1.

[12] Laws 1935, c. 184.

[13] In *Pub. Serv. Com. of Wyoming v. Grimshaw*, 53 Pac. (2d) 1 (1935), and *State v. Grimshaw*, 53 Pac. (2d) 13 (1935), the Supreme Court of the State of Wyoming sustained the constitutionality of that State's statute as it affected contract carriers by logic which supports the contention that the business of contract carriage is affected with a public interest, but this court did not say so definitely and in a decisive manner. See also *Baker v. Glenn*, 2 Fed. Supp. 880 (1933), and *Anderson v. Thomas*, 26 Pac. (2d) 60 (1933).

[14] Order M.V. No. 22787, Hearing No. 1434, effective April 1, 1936.

Court had evaded in *Stephenson* v. *Binford*. The following statement is significant:

"But, conceding that the distinction attempted to be made by respondents is sound, we have no hesitancy in holding that the transportation of property on the public highways for gain is a business affected with a public interest. And on this ground alone, the order is sustainable; authority to make it having been conferred by the act."[15]

Many regulatory authorities and students of regulation regret that this case was not carried to the United States Supreme Court. Had the case been heard by the highest court of the land and the Washington court's ruling been upheld, the Interstate Commerce Commission would have been on a surer legal footing in administering the rate provisions of the Motor Carrier Act of 1935 applying to contract carriers in interstate commerce. Also the legal uncertainty which the few state commissions that have undertaken to enforce their contract-carrier rate provisions have confronted would have been overcome. Nevertheless, this decision of the Washington Supreme Court gives for the first time a clear declaration by a court of last resort that the business of contract carriage by motor vehicle may be regulated on the ground that it is a business affected with a public interest. It is likely to encourage judges in the future to face squarely the real legal issue—whether contract carriers are bona fide public utilities. Since there appears little logic in basing rate regulation of contract carriers on the right of states to preserve their highways, it would seem sensible that an effort should be made to submit this question again to the United States Supreme Court for final pronouncement.

JAMES C. NELSON
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[15] *Supra* n. 1, at 242.

Book Review Department

Urban Land

Bassett, Edward M., Zoning: The Laws, Administration, and Court Decisions during the First Twenty Years. *New York: Russell Sage Foundation, 1936. 275pp. $3.*

Mr. Bassett, who more than anyone else merits the name of the father of zoning, has written a review of the development of zoning law which reflects his well-known qualities of care, caution, and conservatism. In the restrained style of a parliamentary report, he reminds us constantly that zoning, to be sustained by the courts, must be demonstrably related to considerations of health, safety, morals, comfort, convenience, and general welfare. His abundant experience as a legal consultant has shown him many instances where zoning has been used to serve selfish purposes without regard for the general welfare; as a substitute for private deed restrictions; for arbitrary and discriminatory action which the courts have refused to tolerate. Mr. Bassett may be pardoned if he looked upon the New York Building Zone Resolution of 1916 and saw that it was good.

As counsel to the so-called Zoning Committee Mr. Bassett has accumulated the master file of court decisions, reported and unreported, nisi prius and appellate, in the country. It is out of this material that the discussion is largely woven. Even when he is describing a law, his citation is likely to be that of a decision; he is chary of reference to periodical literature, even to notable law review articles.

The result is a certain artificiality of treatment, reminiscent of the hornbook. A whole page is given to quoting one of those thumping judicial utterances that the court will not interfere with the exercise of administrative discretion by a board of appeals (p. 152), which is, of course, to be matched by equally thumping statements that where the board's action has been arbitrary, etc. This kind of analysis deals almost entirely with "good" reasons (stores in residence districts spread disease-bearing flies; three-story residences can be excluded because of the inadequacy of fire-fighting equipment); but does not give a sense of the "real" reasons, of the dynamics of the development of zoning. Even if we are to do reverence to Mr. Bassett's favorite formula, the concept of "general welfare" may change in 20 years. (Where Mr. Bassett is arguing against an extension of zoning of which he is fearful, the shibboleth is "health and safety," and "general welfare" is omitted (p. 87).) Of rural zoning, he has only to report that "thus far, however, there are few illustrations" (p. 49). The sub-title of the book might better have been "The Laws, Procedure and Court Decisions;" a book on the Administration of Zoning has yet to be written.

In short, the volume is much the best review of the decisions that has yet been published, and will be of value to an attorney who has a case to prepare; and no one who follows Mr. Bassett's cautions can possibly get into trouble.

Charles S. Ascher
Secretary, Committee on Public Administration, Social Science Research Council.

Bemis, Albert Farwell. Rational Design. Part III of The Evolving House. *Cambridge: Massachusetts Institute of Technology, 1936. pp. xxv, 625. $4.00.*

Although the homes of today contain modern equipment, their construction is carried out much the same as it has been for centuries. Not only is each building manufactured on the site, but the manufacture is done by the old hand methods. The construction of even a small house requires the cutting, fitting, and fastening together of literally thousands of pieces of wood and steel, the mixing and application of concrete, plaster, and paint—all done without use of modern labor-saving and time-saving machinery.

Yet in all other major manufacturing industries mass-production methods and the use of new and better materials have resulted in tremendous economies and a material improvement in quality. The public is asking why modern methods cannot be applied to the production of one of our most important necessities—shelter.

Albert Farwell Bemis has been studying and experimenting with this problem for

years and in "Rational Design," the third volume of his trilogy, "The Evolving House," sets forth his views as to how this can be done. An evaluation of efforts made by others in this direction and an examination of the methods and materials ordinarily used in construction leads him to the belief that

"the principles of mass production must be applied not to the completed house but to standardized units for it—to the elements of structure that may be assembled to form any house. When standardized parts for the house are uniform and interchangeable, even between different systems, they can be assembled so as to permit variety both in plan and appearance and they certainly can be mass produced."

As a basis for the design of building parts which will be susceptible of mass production in the factory and mass assembly on the site, Mr. Bemis develops his theory of rational design—the Cubical Module. Although the architect and engineer and even the interested layman may understand and appreciate the principles of cubic modularity applied to building design, the development of that theory becomes rather involved for any but the very technically minded to follow. Only time will prove whether the complexity of detail through which Mr. Bemis has gone in order to arrive at simplicity, is necessary.

Much more interesting are his chapters on the results to be obtained through use of the cubical modular theory. Rational design and rational production require not only a reorganization of the building industry but a reorientation of our ideas of what an attractive and livable house should be. Mr. Bemis believes that application of the cubical modular theory provides a modus operandi for a transitional period in which this can be brought about without too great a jolt to our sensibilities and the economics of the affected industries.

Mr. Bemis has been guilty—perhaps justifiably so—of rationalizing his own thinking when he says that a man's house is—and should be—the last bulwark of individualism in a day and age when more and more each man wants exactly what his neighbor has, even to the details of size, shape, and color. He is on firmer ground when he says:

"Social betterment demands that standard housing at less cost be made available to greater groups of the population. No new type of construction will have significance in solving any problem unless it produces housing of the proper standards at a price not now available."

Mr. Bemis is no advocate of public housing. It is his firm belief ". . . . that decreased costs must be actual, not paper savings achieved through relaxation of taxes by the state or relinquishment of profit by the producer."

The last half of the book is a supplement by John Burchard, 2nd, Vice-President of Bemis Industries. Entitled a "Survey of Efforts to Modernize Housing Structure," it consists of diagrammatically illustrated descriptions of some hundred systems of building the structural frame or shell of a house, together with some worth-while comments on those systems.

The importance of the cubical modular theory is not the sole measure of the worth of the book. The last few chapters and the supplement stand on their own feet, regardless of the validity of the theory.

A. C. SHIRE

Technical Editor,
The Architectural Forum.

Land Resources

Woodard, Florence May. THE TOWN PROPRIETORS IN VERMONT: THE NEW ENGLAND TOWN PROPRIETORSHIP IN DECLINE. *New York: Columbia University Press, 1936. pp. 163. $2.50.*

The author of this book is an Assistant Professor of Economics in the University of Vermont. The book is a contribution to the political, as well as the economic history of colonial New England, and is appreciably broader in its content than the title indicates. It includes a description of the struggle over land grants between the early settlers of Vermont and the government of the State of New York, and of the struggle between independent Vermont and the Federal Congress with respect to the disposal of public lands.

Chapter I deals with the colonial land system of New England under which the Massachusetts Bay Colony had the right from the English Crown to grant areas of land to organized groups who desired to settle upon the land. The unit of land granted was a township, and in the early days the proprietors were actual settlers upon the land and divided it among themselves or others who might be admitted to the proprietorship. The proprietors had the right to levy

taxes, to sue and be sued, to levy penalties, and to make by-laws. They were responsible for building roads connecting the new colony with other settlements; they were active in establishing sawmills and gristmills to meet the needs of the members of these self-sufficing communities; they made provision for a village church and a minister. They also encouraged artisans, such as carpenters and blacksmiths, to settle in the village.

The land was divided equally among the proprietors, and each one received a small tract of land in the village for house and garden purposes, a share of the meadow land, and a share of the timber land. Thus, each man's holdings were somewhat scattered, but the people were settled together in the village. Considerable space is given to the discussion of the possible origin of this New England village community.

After the middle of the 18th Century, fewer and fewer of the original proprietors actually settled on the land. The larger proportion of them sold out their rights to others. Thus, while in the early days the proprietary system was first of all a technique of settling a township, it later became little more than a speculative land company.

Special chapters are devoted to the proprietorship in the town of Windsor in eastern Vermont, which was granted by the Governor of New Hampshire Province to 59 proprietors in 1761. The book gives a detailed description of the history of the land system of this township, and contrasts it with the history of the proprietorship in the town of Hyde Park in North Central Vermont, which was chartered under the Vermont law in 1781. While the former performed most of the functions of the old New England proprietorships in the way of providing facilities for the new settlers, the Hyde Park proprietorship performed practically no other function than that of the speculative sale of land to prospective settlers. Even the Governor of the State participated in this speculation.

This book is an important contribution to the history of land settlement in the United States.

HENRY C. TAYLOR

Director, Farm Foundation, Chicago.

National Resources Board. STATE PLANNING: A REVIEW OF ACTIVITIES AND PROGRESS. *Washington: Government Printing Office, 1935. pp. xiii, 310. 75 cents.*

Here is a bird's-eye view of the first two years of widespread activity in state planning. New York (1926), Wisconsin, Michigan, Illinois, Iowa had undertaken general surveys or sections of a state plan in detail (land-use surveys, soil classification surveys); but it was the offer of federal financial support, through the provision of planning consultants and relief white-collar workers, that led to the organization of state boards in every state but Louisiana and Delaware within two years. Many have achieved at least the foundation for a permanent career by legislative authorization; some have still only such status as is afforded by appointment by the governor. Two regional planning boards are recognized by the National Resources Board.

The present report surveys state planning in two ways. First, there is a recital, state by state, of the organization and staff of each board, its background and citizen support, duties and functions, funds and appropriations, accomplishments and recommendations. (The fatal influence of the library school is responsible, I fear, for those singsong topic headings.) The more interesting part of the report is a 170-page conspectus of the fields of activity of all the boards, reviewed topically. The several boards have concerned themselves with basic data, land planning, water, power, minerals, transport, public works, social and economic trends, and governmental relationships—an enormously wide range of thought.

The very breadth of attack (especially in view of the limited resources) is some indication that the state planning movement is on its way without quite knowing where it is going. Certainly this is no criticism at the end of two years; it would be deplorable if all 46 groups had followed the same path. It means, however, that after the boards have tried to digest their first bites, they will have to decide how much they can chew in the future.

Nor has the movement yet decided whether its role is primarily research and advice or coordination. This difference in approach is reflected somewhat in the different constitution of the boards, whether

of "laymen" (a deceptive word meaning university experts) or of state department heads. Finally, it remains to be seen whether planning has been woven into the texture of state government. The test will come when federal financial support is withdrawn.

In the meantime, here is a good sample which will give the interested reader the flavor of the flood of reports, maps, and charts, that taken in the mass threaten to inundate all but the hardiest.

CHARLES S. ASCHER
Secretary, Committee on Public Administration, Social Science Research Council.

Public Utilities

Waltersdorf, M. C. REGULATION OF PUBLIC UTILITIES IN NEW JERSEY. *Baltimore: Waverly Press, Inc., 1936. Copyright: the Author. pp. 225. $2.50.*

Case studies of commission regulation of public utilities are particularly welcome because of the large number of separate jurisdictions and the consequent difficulty of obtaining competent information on the organization, powers, methods, and policies of so large a number of commissions. In this study Professor Waltersdorf discusses some of the basic principles of utility regulation with particular reference to the experience and practice of the New Jersey Board of Public Utility Commissioners. Separate chapters are devoted to the development of public utilities in New Jersey, commission organization, powers and procedure, standards of service, valuation, rate of return, depreciation, uniform accounting, control of security issues, rate-making, electric railways and motor busses, and the holding company. The concluding chapter presents a thoughtful summary and appraisal of regulation in New Jersey.

This study was originally written more than 10 years ago and although the author has introduced much new material, the great majority of references relate to cases decided before 1924. Unfortunately, the reader is frequently left in doubt whether a particular policy (for which the reference may be to a decision or to an annual report of the Board as far back as 1911) has present application or significance in the State. The force of this criticism is that the author has so interwoven the historical and the general, that he has made it difficult for the reader to get from the book an accurate picture of the current pattern of regulation in New Jersey. LESLIE T. FOURNIER.
Assistant Professor of Economics, Princeton University.

Marston, Anson and Agg, Thomas R. ENGINEERING VALUATION. *New York: McGraw-Hill Book Company, Inc., 1936. pp. xii, 655. $6.00.*

This book, according to the preface, is intended "to provide a comprehensive, reliable, and up-to-date treatise for practicing engineers, so arranged as to be suitable also for use as a college textbook." To fulfill the double purpose of handbook and textbook, the authors have presented a study embodying a large amount of technical detail, so that only the more general phases and conclusions can be referred to in a brief review such as this.

Valuations of all types of property are covered, but particular attention is given to public utility valuation. One of the chapters presents in detail the procedure in connection with valuation of the electric utility at Ames, Iowa.

Probably of most general interest is the rather extensive discussion of mortality and depreciation in which many curves and formulas are presented. The various theories of depreciation are explained in some detail and rejected as theoretical in favor of the authors' own views that: "The present-worth actual depreciation principle is that the depreciated value of an industrial-property unit, at any date during its service life, is the present worth at that date of the probable future operation returns yet to be earned by its probable future services." (p. 105.) This means in general that the per cent condition of a unit of property at any age is the per cent shown for that age on a so-called sinking-fund curve, the interest rate being the fair rate of return for the entire property of which the unit is a part.

As to depreciation generally, it is noteworthy that the authors recognize that annual and accrued depreciation are merely two phases of the same thing and the same principles should govern determination of both. This is a matter which has been the subject of much dispute in public utility rate cases, and utilities have usually taken the position that annual depreciation and per cent condition have no direct relationship, the former being a straight-line function

of the average service life of the property, while the latter represents the observed or physical condition at any particular time apart from age and service life.

A chapter is devoted to price trends and indexes in which the general manner of applying such trends for the purpose of bringing valuations up to date is explained.

Another chapter contains brief summaries of 68 important court valuation decisions, chiefly public utility cases. This compilation is useful, but the exact interpretation to be placed upon many of the decisions has been subject to much controversy and not every one will agree with the interpretations presented.

As to going value, it is surprising to find that the authors apparently subscribe to the theory that the going value of a public utility is the sum of the amounts by which, during the theoretical reproduction period, the utility would fail in the several years to earn a full return. This is essentially the method which was rejected by the United States Supreme Court in the Los Angeles Gas and Electric case and elsewhere as being too hypothetical.

The book contains a useful index and four appendices, including a table (covering 80 pages) which gives, to the fourth decimal place, the per cent condition by years corresponding to sinking-fund curves based on 0% to 8% for probable lives of 1 to 100 years. So far as the writer knows, a table such as this is not readily available elsewhere in printed form, and it will be welcomed by those who have had to deal with sinking-fund curves in connection with depreciation.

In general, the book is probably too technical to be of interest to general readers, but will serve a very useful purpose for those who are interested in the technical phases of valuation work, especially for public utility valuation.

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NEL CINQUANTENARIO DELLA SOCIETA EDISON (On the Fiftieth Anniversary of Societa Edison). *Milan: Societa Edison, 1935. 4 vols. 510, 487, 632, 318 pp.*

This magnificent work, universal in its appeal, is well fitted to mark the Golden Jubilee of the oldest Continental public utility. Not only do each of the four volumes set a fine example in typography, but the material comprises a thorough and comprehensive history of the technical and economic developments of the electric power industry.

The first volume deals with the technique of electric power generation, transmission, and distribution. The second and third treat of the economic phases of the electric power industry and traces its development in the various countries of the world.

The fourth volume is historic in scope and presents an excellent picture of the growth of the ancient city of Milan as well as of the Societa Edison which ranks among the largest public utilities in Europe. Statistical analyses of the city are given, indicating its economic structure, the development of its industries, and the evolution of its finances. The Societa Edison is depicted from the time its first steam-generator was installed to the present system supplying a large part of Northern Italy, having an area greater than the whole of Switzerland, and comprising 1,800 miles of transmission line arranged as a 130-kilovolt grid, fed by 149 hydro-electric plants and 20 steam stations.

Although no specific part of this work may be singled out, the analysis of world power problems is probably most striking.

After treating of the economic peculiarities of each country, a description is given of its electrical networks, methods of generating energy most economically, and the distribution of consumption. The question of financing is thoroughly undertaken as well as that of the various ways in which revenue is obtained. As might be expected, there is little to differentiate basic methods which approach universality. A noticeable gap in the four volumes is Russia which receives little space, although the authors grant that USSR promises to be in the first rank of power-producing countries as a result of vigorous encouragement of large consumption.

The statistical information profusely scattered through each volume has been drawn from many sources, which are indicated in the complete bibliographies at the end of each chapter.

The Societa Edison through its Managing Director Signor Giacinto Motta, Professor Giorgio Mortara of the Milan University, and his many collaborators has rendered a valuable service in the presentation of this work. Whether one agrees with some of the conclusions arrived at does not detract from the general usefulness of the exposition.

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Rural Electrification Administration.